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DISEASES CAUSED BY BACTERIA AND FUNGI

FIELDER, F. G. (1949.) **A note on staphylococcosis in chickens.**—*Aust. vet. J.* 25. 230-231. 1539

Cutaneous staphylococcosis in chickens 5-6 weeks old occurred in three widely separated districts of New South Wales. The chickens involved had all originated from one hatchery, where the same condition was causing a mortality of 3% of all hatches.

In one outbreak 30 died from a flock of 100, in the second almost 100% of a flock of 300 died, and in the third 60 died from a flock of 400 chickens. Affected birds had an appearance of severe bruising with subcutaneous haemorrhages on the wings, head, neck and body with skin necrosis and scab formation. Coagulase positive *Staph. aureus* was recovered from the lesions.

—J. T. HAYSTON.

HUSSEMAN, D. L., & TANNER, F. W. (1949.) **A comparison of strains of staphylococci isolated from foods.**—*Food Res., Ill.* 14. 91-97. [Abst. in *Bull. Hyg., Lond.* 24. 795. (1949), copied *verbatim*. Signed: W. G. SAVAGE.] 1540

Forty strains of staphylococci chosen at random from collections not associated with food poisoning were compared with 28 strains accepted as responsible for food poisoning outbreaks. The majority of these 28 strains had been isolated a long time previously and maintained in the laboratory. As regards pigment production on Loeffler's medium the N.F.P. (not food poisoning strains) group were 7.5 per cent. orange, 32.5 per cent. white, 60 per cent. yellow or cream. The F.P. strains were 75 per cent. orange, 3.6 per cent. white, 21.4 per cent. yellow or cream. Haemolysis test, growth on brom-thymol blue agar, growth on 7.5 per cent. NaCl phenol red mannitol agar, and Stone's reaction showed no distinctive differences between the two groups. Acid formation on phenol red mannitol agar showed 75 per cent. positive in the N.F.P. group and 100 per cent.

positive in the F.P. group. The only really distinctive difference was in the coagulase test (rabbit serum) with N.F.P. 2.5 per cent. positive and F.P. strains 96.4 per cent. positive. Only a few kitten tests were performed. In these infections the alpha and beta toxins were not neutralized or destroyed [as is usually done] but cell-free filtrates *in toto* were injected intraperitoneally into kittens. Seven toxins from F.P. strains were injected into 16 kittens and all but three animals reacted with vomiting and diarrhoea. Two different toxins accounted for the negative results. Seven toxins from N.F.P. strains were injected into 14 kittens [presumably into two kittens each]. In four cases both kittens vomited, in two cases one kitten was positive and one negative and in one case both kittens were negative. Two kittens were injected with inoculated media and of these one gave a positive one a negative reaction. The authors remark "no conclusion can be reached from this work with kittens" and "our present-day tests are very inaccurate."

KRUPSKI, A. (1948.) Zur Frage der Streptokokkenanämie beim Pferd. [**Streptococcal anaemia in horses.**]—*Schweiz. Arch. Tierheilk.* 90. 484-494. 1541

In answer to STECK [see *V. B.* 20. 277] K. upholds his view, that streptococcal infections can create the clinical anatomical and histological picture of equine infectious anaemia.—W. STECK.

MURPHY, J. M. (1948.) **The posttreatment occurrence of streptococcal infection of the bovine udder.**—*Cornell Vet.* 38 156-163. 1542

In a well managed herd of 60 pure-bred Holstein-Friesian cows the incidence of *Streptococcus agalactiae* infection was 27.2%. During a nine-month period 76 infected quarters were treated with 5 x 20,000 units of penicillin in 50 ml. of water given at 12-hourly intervals; a few of the infected and cured cows were removed and the numbers made up with newly calved

heifers and at the end of this period the incidence of infection was 2.7%. No treatment was given during the next ten months and in spite of good hygiene the rate of infection rose to 12.2%. M. considers that the reduction of infection might have resulted not only from treatment, but that the age factor might play a role, this difference being influenced by the lowered age of the herd.

—J. I. TAYLOR.

II & III. PACKER, R. A. (1948.) **Penicillin therapy in chronic bovine mastitis. II. Penicillin levels in the udder during treatment. III. Treatment of mastitis.**—*Amer. J. vet. Res.* 9. 259-263; & 264-269. [Part I, *V.B.* in press.] 1543

II. Experiments are reported indicating that within the limits of dosage used the interval between injections, rather than the amount of penicillin used, was of importance in maintaining the penicillin level following intramammary infusion. There were no marked differences in the levels at 12-hour or at 24-hour periods after the initial injection of doses varying from 25,000-200,000 units. Assay of the penicillin content of fore-milk and strippings showed no marked difference, the former being on an average five units higher. There was no difference in the rate of disappearance of penicillin from a normal or a diseased quarter.

III. Penicillin (at first as crude penicillin, later as sodium penicillin) was used in treating infections with *Staphylococcus aureus* and with streptococci (*Str. uberis*, *Str. dysgalactiae*, and one case of *Str. agalactiae* infection), in 53 cows involving 122 quarters. 83% of 47 streptococcal infections responded to treatment, one or two injections at 24-hour intervals appearing to be as efficient as three or four; 48% of 75 cases of *Staph. aureus* infection remained negative after treatment, three or four injections at 12-hour intervals being more successful than one or two injections at 24-hour intervals.—E. COTCHIN.

FILIPOVIĆ, D. (1948.) [The effect of mastitis on the fat content of milk.]—*Jugoslav. vet. Glasn.* 2. 564-570. [In Serbian; abst. from French summary.] 1544

F. examined milk samples from mastitis infected cows from various parts of Yugoslavia over a period of three years and found that the fat content ranged from 0.6-14.0%. Results of 61 tests are tabulated.—E. G.

McFARLANE, D., BLACKBURN, P. S., MALCOLM, J. F., & WILSON, A. L. (1949.) **A comparison of ante-mortem and post-mortem findings in bovine mastitis.**—*Vet. Rec.* 61. 807-810. 1545

Fifty-four quarters were examined, during life, for mastitis by cell counts and culture tests,

and P.M. by histological and culture tests of the udder tissue. It was found that over half the early cases of mastitis escape detection if based on culture tests of milk alone, but only some 5% escape if the cell count test method is used. Cell counts during life and histological examination P.M. can prove the presence of mastitis even though no pathogens can be found in either state. This indicates that the early stages of the disease may be caused by factors, or organisms, as yet unknown. Also, the 39% histologically positive quarters, with no organisms in the milk or tissue, are a clear indication that the "non-specific bovine mastitis" cannot be rare.—M. WOODBINE.

GOTS, J. S., & SEVAG, M. G. (1948.) **Enzymatic studies on the mechanism of the resistance of pneumococcus to drugs. I. Studies of the dehydrogenase activities and interrelationships of pneumococci susceptible and resistant to acriflavine, atabrine, optochin, propamidine, and sulfonamides.**—*J. Bact.* 56. 709-722. 1546

SEVAG, M. G., & GOTS, J. S. (1948.) **Enzymatic studies on the mechanism of the resistance of pneumococcus to drugs. II. The inhibition of dehydrogenase activities by drugs; antagonistic effects of riboflavin to inhibitions. III. Experimental results indicating alteration in enzyme proteins associated with the development of resistance to drugs.**—*Ibid.* 723-735; 737-748. 1547

I, II & III. The development of pneumococci resistant to acriflavine, propamidine, optochin and sulphonamides is recorded in detail. Such resistance was specific except for propamidine and acriflavine which gave cross-resistance. The glucose dehydrogenase activities of the susceptible pneumococci were inhibited by all the drugs except sulphonamides, but the glucose dehydrogenase of the resistant strains was less subject to such inhibition. A cross-resistance to inhibition of glucose dehydrogenase exists between acridine- and propamidine-resistant organisms.

Riboflavin counteracts the inhibitory effect of acriflavine and atabrine on susceptible organisms and also relieves the glucose dehydrogenase inhibition.

The development of resistance is attributed to an alteration of the protein component of the enzymes associated with it.—M. WOODBINE.

BEHRENS, H. (1947.) **Untersuchungen über die Grösse der Lnn. mandibulares bei gesunden und tuberkulösen Rindern. [The size of the submaxillary lymph nodes in healthy and tuberculous cattle.]**—*Dtsch. tierärztl. Wschr.* 54. 219-220. 1548

B. examined 393 healthy cattle and 82 tuberculous slaughter cattle. He concluded that

the size of the submaxillary lymph nodes did not give an indication as to whether they were tuberculous, except when the disease affected areas drained by these organs.—W. R. BETT.

TILGNER, K. (1949.) Der Wert der Komplement-bindungsmethode für die Tuberkulosedagnostik in stark verseuchten Milchviehherden. [The complement-fixation test in diagnosis of TB. in dairy herds.]—*Proc. XIIth Internat. Dairy Congr., Stockholm*. Vol. I. Sect. I & VI. 503–509. [In German. English, French & German summaries. Abst. from English summary.] 1549

In tests on 400 beef cattle complement-fixation tests were valuable for the detection of cattle with advanced TB. Serological blood tests should be useful in TB. control work in heavily infected herds.

SAXER, E. (1945.) Über die Herkunft der Tuberkelbazillen in der Konsummilch. [The origin of tubercle bacilli in market milk.]—*Schweiz. Z. Path. Bakt.* 8. 461–462. 1550

S. speculates as to the origins of tubercle bacilli in market milk and on the extent to which the bacilli can get into the milk after it is drawn from the udder, from infection of the litter and surroundings.

He infected cattle [number not stated] with a strain of low virulence (Strain P) [method of infection not stated] and found that on five occasions milk from three of these cattle inoculated into g. pigs did produce tuberculosis. In one attempt to cultivate the bacilli from the milk the result was positive.

In another experiment S. inoculated virulent tubercle bacilli into one quarter of the udder of a cow and eight months later milked this cow on to the bedding. Cows were allowed to use this bedding and their udders were washed with sterile water and attempts were made to grow tubercle bacilli from sediment obtained from the washing by centrifugation.

In 39 washes tubercle bacilli were not demonstrable microscopically. In cultures set up from 17 washes tubercle bacilli were recovered from only one. G. pigs were inoculated from 39 washes and became infected as a result of inoculation of seven of them.—E. G.

GRÄUB, E. [P.D.], ZSCHOKKE, W. [P.D.], SAXER, E. [P.D.], & VONARBURG, H. (1947.) Tuberkulöse Reinfektion beim Rinde und ihr Einfluss auf die Resistenz. [Tuberculous reinfection in cattle and its influence on resistance.] pp. 93. Numerous figs. Basel: S. Karger. S.fr.12. 1551

The authors point out that the work described in this monograph has already been published [see *V.B.* 9. 289; 18. 106; 19. 189 and preceding

abst.], but state that as it has not become well known they have republished it in this form.

KARLSON, A. G., ZINOBER, M. R., & FELDMAN, W. H. (1950.) A whole blood, rapid agglutination test for avian tuberculosis—A preliminary report.—*Amer. J. vet. Res.* 11. 137–141. [Authors' summary and conclusions copied verbatim.] 1552

Concentrated antigens for a whole blood, rapid agglutination test for avian tuberculosis were prepared from 40 strains of avian tubercle bacilli grown in liquid synthetic medium. Seventeen of the 40 cultures produced antigens which could not be used because of autoagglutination. Only five of the remaining 23 antigens showed a high degree of specificity when tested with serum from tuberculous chickens and from normal chickens. A comparison of the tuberculin reaction and the whole blood plate agglutination test was made on four farm flocks with a total of 282 birds. Forty-four reacted to the tuberculin test and each of these also gave a positive agglutination reaction. No birds had positive tuberculin reactions and negative agglutination reactions, but there were 14 in which the tuberculin reaction was negative and the agglutination reaction positive. Two of these 14 had grossly visible lesions of tuberculosis. The other 12 had no lesions demonstrable at necropsy nor was it possible to demonstrate lesions of acid-fast bacilli by histologic or cultural procedures. The chickens that reacted only to the agglutination test came from three farms where avian tuberculosis was known to exist. There were no agglutination reactors in the one flock that had no tuberculin reactors.

The observations made so far suggest that a whole blood rapid agglutination test for avian tuberculosis can be used to detect infected flocks. The test requires less time than the tuberculin test and could be done at the same time as the whole blood test for pullorum disease. Further work is required to select suitable strains of avian tubercle bacilli for the preparation of antigens. In addition, it will be necessary to determine the optimal conditions of growth of suitable strains, the optimal concentration of the antigen, the optimal pH, and the effect of preservatives on the antigens. The specificity of the whole blood agglutination test for avian tuberculosis must be determined by comparing it with the results of tuberculin tests, pathologic examination, and bacteriologic procedures. The data obtained in this preliminary study seem sufficiently significant to justify a more comprehensive investigation of a procedure that might prove useful in detecting avian tuberculous infections.

HEDSTRÖM, H. (1949.) Studier över S.K.

Hudtuberkulos hos nötkreatur avseende sjukdomens utbredning i Sverige, dess diagnostik, etiologi och allergi för tuberkulin. [So-called skin tuberculosis in cattle.] pp. 192. Stockholm: Gernandts Boktryckeri. [Abst. from English summary.] 1553

The literature of the subject is reviewed and a detailed account is given of the disease as it occurs in Sweden. 606 specimens have been examined by H. and in all cases alcohol-acid-fast organisms were demonstrated microscopically. Various media were used in attempts to cultivate the causal agent. Acid-fast organisms were cultivated from 97 specimens, but none of these were pathogenic for small animals, fowls or cattle. A yeast-like fungus was isolated from some of the specimens, but is not considered to be of significance in the causation of the disease. Three cattle inoculated with suspensions of material from natural cases developed lesions which clinically and histologically resembled those of the disease.

—L. M. MARKSON.

MARSHAK, A., & KUSCHNER, M. (1950.) The action of streptomycin and usnic acid on the development of tuberculosis in guinea pigs.—*Publ. Hlth Rep., Wash.* 65. 181–144. [Authors' summary copied *verbatim*.] 1554

Five groups of guinea pigs which had been inoculated with tubercle bacilli were established as follows: (i) Untreated; (ii) Usnic acid only; (iii) High doses of streptomycin (6 mg./day); (iv) Low doses of streptomycin (2 mg./day); (v) Usnic acid plus low doses of streptomycin. Severity of tuberculosis was compared among the various groups. Usnic acid alone did not affect any retardation of the disease nor did low doses of streptomycin (2 mg./day). A comparable, marked retardation in the development of the disease was obtained by each of two modes of treatment: (a) with high doses of streptomycin, and (b) with usnic acid combined with low doses of streptomycin.

SWEDBERG, B. (1949.) Further experiences in the treatment of experimental tuberculous infection in white mice by para-amino-salicylic acid (PAS) employing chemo-sensitive and chemo-resistant strains of tubercle bacilli.—*Acta med. scand.* 135. 289–291. [Author's summary copied *verbatim*.] 1555

In vitro determinations of the sensitivity and resistance to PAS respectively, using Dubos' medium, agree closely with the therapeutic results in white mice, treated with PAS per os in doses giving blood concentrations up to 2 mg per 100 ml. Using less severe infections and a 10 times higher dose of PAS (blood concentrations up to 9 mg. per 100 ml) no cure was achieved after 110 days

of treatment. The therapeutic results with streptomycin (1,000 units once daily) were much more apparent.

McKEE, C. M., RAKE, G., DONOVICK, R., & JAMBOR, W. P. (1949.) The use of the mouse in a standardized test for antituberculous activity of compounds of natural or synthetic origin. I. Choice and standardization of culture.—*Amer. Rev. Tuberc.* 60. 90–108. [English and Spanish summaries. English summary copied *verbatim*.] 1556

DONOVICK, R., McKEE, C. M., JAMBOR, W. P., & RAKE, G. (1949.) The use of the mouse in a standardized test for antituberculous activity of compounds of natural or synthetic origin. II. Choice of mouse strain.—*Ibid.* 109–120. [English and Spanish summaries. English summary copied *verbatim*.] 1557

RAKE, G., JAMBOR, W. P., McKEE, C. M., PANSY, F., WISELOGLE, F. Y., & DONOVICK, R. (1949.) The use of the mouse in a standardized test for antituberculous activity of compounds of natural or synthetic origin. III. The standardized test.—*Ibid.* 121–130. [English and Spanish summaries. English summary copied *verbatim*.] 1558

I. A procedure for maintaining cultures of *M. tuberculosis* of standard virulence for use in therapeutic experiments in mice has been established. The standard medium chosen for growth of cultures was Kirchner synthetic medium with the addition of 0.05 per cent Tween 80 and 0.1 per cent human serum albumin. A bovine strain of *M. tuberculosis*, the well-known Ravenel, was chosen as the standard strain since it proved more virulent and gave more constant results than three other strains tested. The Ravenel culture when maintained in this medium under the conditions described retains its virulence for mice and gives uniform results in successive experiments. A five day culture when diluted 1:10 with saline and injected intravenously in 0.5 ml. amount gives greater than 99 per cent deaths within 35 days with an average t_{50} of 19.8 days.

II. Using a carefully standardized inoculum of *M. tuberculosis* var. *bovis* (Ravenel) grown in a liquid medium containing Tween 80, comparisons have been made of the death rates of 7 strains of mice. The mouse of choice on the basis of uniformity of response, as well as ready availability in large supply, was found to be an albino mouse with brown, non-agouti background, the CF1. Intravenous inoculation was shown to be preferable to the intraperitoneal route even when egg yolk was used as the suspending medium for the inoculum. As was the case with the selection of the Ravenel strain of *M. tuberculosis* var. *bovis*, the choice of the mouse was regarded as tentative.

Final choice could only be made when results were available on tests in this animal of drugs with known antituberculous activity in man. The most uniform results were obtained with CF1 mice weighing between 14 to 18 Gm. and ranging in age from 4-6 weeks.

Deaths in CF1 mice of appropriate age receiving a standard intravenous inoculum followed a normal frequency distribution curve which gave straight lines when cumulative percentage mortality, on a probit scale, was plotted against time on an arithmetic scale. Such straight lines provide a relatively simple procedure for determining the 50 per cent mortality time (t_{50}). Among infected CF1 mice receiving no therapeutic treatment, there was little difference between t_{50} and average survival times. For certain practical considerations, however, the t_{50} was considered to be preferable to the average survival time as an end point criterion in a test designed for chemotherapeutic studies.

III. Information is presented on the results obtained by the use of certain standardized procedures for the evaluation of antituberculous compounds *in vitro* and *in vivo*.

The use of a homozygous mouse (the CF1) and a bovine strain of *M. tuberculosis* (Ravenel) has allowed the development of a test which shows good reproducibility both in the untreated infected mice and in the mice treated with known active drugs. Small numbers of mice are used and the results can be evaluated in under four weeks. Compounds of unknown antituberculous potential are now being tested by the above methods and the results will be presented later.

MADIGAN, D. G., GRIFFITHS, L. L., LYNCH, M. J. G., BRUCE, R. A., KAY, S., & BROWNLEE, G. (1950.) **Para-aminosalicylic acid in tuberculosis. Clinical and pharmacological aspects.**—*Lancet*. 258. 239-245. [Abst. from authors' summary.] 1559

The clinical description of "detoxication" is applied to the immediate effect of P.A.S. therapy in the tuberculous. Two pharmacological, as distinct from antibacterial, mechanisms are involved, (i) probably associated with a direct action on the products of metabolism of the causal organism or on the biochemical lesions it produces. It has not been identified. A blood-P.A.S. level similar to that produced clinically does not protect the tuberculous sensitised guinea-pig from a lethal challenge dose of P.P.D. Old Tuberculin; nor do previous admixture and incubation modify the effect of the challenge; (ii) an antipyretic action due to peripheral vasodilatation.

Changes in blood-counts, haemoglobin, and E.S.R. estimates are secondary to the antipyretic effect. In contrast, improvements in the pulse-

rate are not seen at this stage and are thought to indicate more accurately the course of the tuberculosis.

Of 22 strains of tubercle bacilli isolated before P.A.S. therapy all were inhibited from growth by 0.0006-0.025 mg. per 100 ml. of Tween-albumin medium. After four months' treatment 3 of 5 strains showed an increase in resistance of 50-100 times, 2 strains growing in concentrations of 1.6 mg. per 100 ml. In contrast, cultures isolated from 7 patients treated for the same period with sulphatrone and P.A.S. were still sensitive to 0.0005-0.05 mg. of P.A.S. per 100 ml.

After daily doses of 30 g. of P.A.S. a prolongation of blood-clotting time occurs within a few days, and is maintained throughout the course. The administration of 10 mg. of synthetic vitamin K daily by mouth prevents its onset, and the same dose is therapeutic.

Simultaneous estimates of gamma-globulins gave no additional evidence of liver dysfunction.

Serious toxic effects have not been encountered. No complete antidote is known.

STENIUS, R. (1945.) Om hästens tuberkulinallergi. [Tuberculin allergy in the horse.]—*Suom. Eläinlääkäril.* 51. 1-16. [Abst. from German summary.] 1560

Intradermal tuberculin tests on 237 horses in various parts of Finland, using in some cases both bovine and avian tuberculin simultaneously, gave 47.3% of positive reactions. Positive reactions with control broth occurred in 80.5% of animals in one group and none in another group. Maximum local reaction occurred 48 hours after injection, but positive reactions usually persisted for 72 and 96 hours. Bovine tuberculin gave reactions which were usually more marked than those with avian tuberculin. Synthetic and "old" tuberculin gave similar reactions.

It is concluded that the reactions were caused by group sensitization to acid-fast bacteria and were not indicative of infection with tubercle bacilli. The only value of the tuberculin test in the horse lies in a negative reaction, which indicates that the animal has not come in contact with tubercle bacilli.—E. G. WHITE.

INNES, J. R. M., & WILKINS, J. H. (1949.) **The tuberculin test and reaction in the horse.**—*Brit. Vet. J.* 105. 282-286. 1561

Three recent surveys of TB. in the horse in relation to the tuberculin test, carried out in Denmark [PLUM, see *V.B.* 18. 105], Finland [see preceding abst.] and Sweden [MAGNUSSEN, see *V.B.* 18. 224] showed the difficulty in interpreting the significance of a positive reaction.

The authors give protocols of two cases which illustrate the unreliability of the test as a means

of clinical diagnosis. In one case a positive single intradermal test with avian P.P.D., with a negative reaction to bovine P.P.D., occurred in a horse with TB. of the mesenteric lymph nodes, lungs and spleen. The organism was of the bovine type. In the other animal the test was carried out with control broth and with avian and bovine P.P.D. The avian tuberculin gave a marked reaction after 72 hours, with swelling of the lymphatic vessels running down to the prescapular lymph node. No evidence of TB. was found macroscopically or in histological sections or smears. No cultural tests or animal inoculations were carried out. The main lesions P.M. were chronic bronchitis and emphysema.

The authors recommend that both bovine and avian P.P.D. should be used in tests and they consider the result to be of clinical value only when it is negative: there are stated to be no records of active TB. in the horse when the tuberculin test has been negative.—E. G. WHITE.

FRANCIS, J. (1949.) **Tuberculosis. The control of an infectious disease.**—*Lancet*. 257. 549–553. 1562

The advances made in the control of TB. in cattle by the use of the intradermal tests are stressed. The pros and cons for BCG vaccination are reviewed briefly. F. considers that, while chemotherapy may have a part to play, in BCG vaccine we have the means to reduce the numbers of infected persons and to lessen the severity of new infections. He considers that the lack of "official enthusiasm" for this means of control in Great Britain is to be deplored.—D. LUKE.

WEYGOLD. (1949.) Verlust der Resistenz gegen Tuberkulose nach Schutzimpfungen. [**Loss of resistance against TB. after immunization.**]—*Dtsch. tierärztl. Wschr.* 56. 197–198. 1563

W. quotes from an article which describes the development of acute fatal TB. in man following typhoid inoculation, and presumed to be caused by activation of latent existing lesions. The possibility of this occurring in tuberculous cattle inoculated with *Brucella abortus* vaccines is mentioned.—E. G. WHITE.

FRAPPIER, A., & GUY, R. (1949.) **The use of BCG.**—*Canad. med. Ass. J.* 61. 18–24. [French summary.] 1564

The authors review the work done on BCG in Canada since 1925. In tuberculous surroundings BCG administered to human beings afforded protection in 72–80% over a period of five years. The authors prefer the scarification method of vaccination.—P. BOULANGER.

FOG-POULSEN, M. (1949.) Calmettevaccination i Grönland. [**BCG vaccination in Greenland.**]—*Ugeskr. Laeg.* 111. 5–6. [Abst. in *Bull. Hyg.*,

London. 24. 314–315. (1949), copied *verbatim*. Signed: CLAUDE LILLINGSTON.] 1565

Hitherto BCG vaccination has not been extensively practised in Greenland for various reasons—the enormous distances, the passive fatalism of the people, and the chance of the vaccine being stale and inert before use. Among the 1,390 persons examined in the author's district were 251 who, being stethoscopically negative and tuberculin-negative, were vaccinated with BCG. On re-examination, 223 of them were found to be tuberculin-positive. The vaccine supplied by the State Serum Institute in Copenhagen was four times as concentrated as the vaccine intended for use in Denmark itself. This precaution was intended to counteract the effect of time on the strength of the vaccine, which was apparently active even after several months, up to 6 months. Possibly the low temperature of Greenland's icy mountains helped to check deterioration of the vaccine.

JOHANSEN, F. A., ERICKSON, P. T., WOLCOTT, R. R., MEYER, W. H., GRAY, H. H., PREJEAN, B. M., & ROSS, H. (1950.) **Promacetin in treatment of leprosy. Progress report.**—*Publ. Hlth Rep., Wash.* 65. 195–207. [Abst. from authors' conclusions.] 1566

Objective clinical improvement of skin and mucous membrane lesions of lepromatous leprosy is observed to occur following the oral administration of promacetin.

Reduction in the number of leprosy bacilli in the skin and mucous membrane follows clinical improvement. Skin smears commence to show a noticeable reduction of bacilli at the end of 1 year's treatment while many patients show an absence of bacilli in the mucous membrane at this time.

Promacetin is well tolerated orally even upon prolonged administration of doses as high as 3·0 to 4·0 gm. daily. Slight depression of the erythrocyte count may occur during the first few weeks of treatment. Unless there are other complications of the disease present, such depressed counts usually return to the original level spontaneously. Before it can be definitely stated that promacetin does or does not have the property of producing severe grades of anemia when used in the treatment of uncomplicated leprosy, further blood studies on a larger group of patients are necessary.

Renewed clearing after promacetin therapy of apparently stationary residual lesions in patients previously treated with sulfones suggests that a wider application should be made of alternating or combined methods of treatment in leprosy.

ARTHUR, G. H. (1949.) **Some observations on bovine pyelo-nephritis and its treatment with penicillin.**—*Vet. Rec.* 61. 257–261. 1567

In a series of 11 cases, clinical cure resulted from treatment with two million units of penicillin, daily for 3-5 days. The return of the urine to normal after the severe haematuria was of value in prognosis and was accompanied by recovery of appetite and restoration of milk yield. Early cases, such as those in which no abnormalities of the urinary system could be detected *per rectum*, responded best to treatment. Five of the cows were cured completely; in three there was marked clinical improvement but infection persisted causing occasional relapse, and in three cases, two of which had advanced lesions, the treatment appeared to be without effect. The rapid clinical improvement which can result from treatment with penicillin suggests that the symptoms of infection arise directly from the proliferation of *Corynebacterium renale* and not from renal dysfunction.—J. KEPPIE.

CICOGNANI, A. (1948.) La siero-terapia antimalosso sarebbe ostacolata nei suini nei quali l'infezione evolve su fondo pestoso? [Serum therapy in swine erysipelas. Experiments with mixed swine fever and erysipelas sera.]—*Zooprofilassi*. 3. 186-187. 1568

C. discusses the use of mixed erysipelas and swine fever antisera in cases of *Erysipelothrix rhusiopathiae* infection where there is a possibility of latent infection with swine fever.—I. W. J.

SANDSTEDT, H., & SWAHN, O. (1947.) Ympning av smågrisar med avirulent rödsjuckeypämne. [Inoculation of piglets with avirulent erysipelas vaccine.]—*Skand. VetTidskr.* 37. 85-94. [English summary.] 1569

Since the introduction into Sweden in 1943 of the use of inoculation with avirulent vaccine against swine erysipelas, about 200,000 young pigs had been so inoculated by 1947 with good results.

Early in 1945 preliminary tests with 600 piglets 6-8 weeks old and varying in breed and quality were made, using 1.0 ml. vaccine in a single dose. Although the piglets had travelled for 2-5 days before being inoculated, they remained healthy. Large-scale trials were accordingly made on over 25,000 piglets of similar age, using the same dosage in a single inoculation. One unsatisfactory report was received involving three litter mates which became ill and died. One of them was examined P.M. at the Swedish State Institute of Veterinary Medicine and infection could not be demonstrated. The cause of death appeared to be cardiac insufficiency and there were changes suggesting a high degree of nutritional deficiency, probably of calcium. It was considered that the litter mates had died from the same cause. Two deaths suspected to have been caused by swine erysipelas were found P.M. to have resulted from

poisoning and nutritional deficiency respectively. In no cases of infection reported in inoculated piglets had the disease been contracted within three months of inoculation; five cases occurred 3-3.5 months after, five from 3.5-4 months and 12 cases 4-5 months after inoculation. In a total of 35 reported cases of infection in inoculated pigs an investigation of the diet revealed that this had been deficient and unbalanced enough to have caused a lowering of resistance.

The authors concluded that even if these 35 cases were taken to be swine erysipelas, the results of inoculation were satisfactory and that since none of the pigs had become ill within three months after inoculation and the majority of the cases occurred only after 4-5 months, the safeness and usefulness of the method for piglets 6-8 weeks old had been demonstrated.

The general incidence of swine erysipelas in Sweden is discussed. It is considered inadvisable to inoculate during July-September when the frequency of infection is at its height, because the disease takes a more serious turn in an animal inoculated during incubation.—F. E. W.

VALLÉE, M. (1948.) Vaccination active du porc contre le rouget. [Active immunization of pigs against swine erysipelas.]—*Bull. Acad. vét. Fr.* 21. 301-302. 1570

Satisfactory active immunization of pigs in the field was reported using an attenuated culture grown in a medium containing gonacrine. [Details of preparation are not given.]—D. LUKE.

ERCEGOVAC, D., & SEIBOLD, A. (1949.) Aluminium sulfat adsorbat vakcina protiv svinjskog crvenog vetra. [Aluminium sulphate vaccine for swine erysipelas.]—*Bilten Vet.* 2. No. 1. pp. 22-31. [English, German and Russian summaries.] 1571

Mice immunized against *Erysipelothrix rhusiopathiae* with a concentrated aluminium sulphate adsorbate vaccine resisted later a test dose of 100 M.L.D. of a 24-hour culture, but of others tested with 1,000 M.L.D. 50% died. Pigs that were vaccinated with 5 ml. of this vaccine and then infected with the same culture by scarification gave a milder reaction than unvaccinated controls. Vaccinated and non-vaccinated pigs in an area in which the disease was prevalent were kept together and exposed to natural infection. All the unvaccinated pigs died whilst the vaccinated ones remained healthy.—E. G.

ERCEGOVAC, D., & SEIBOLD, A. (1949.) Ispitivanje imunogene vrednosti adsorbat vakcine protiv svinjskog crvenog vetra. I. Saopštenje: ispitivanje na ovcima. [The immunogenic value of adsorbate *Erysipelothrix rhusiopathiae* vaccine in sheep.]—*Bilten Vet.* 2. Nos. 5-6.

pp. 50-53. [English and German summaries. Abst. from English summary.] 1572

Lambs could be infected by scarification as well as intravenously. A single vaccination with 5-10 ml. of aluminium sulphate adsorbate vaccine gave 100% protection against infection by the intravenous route or by scarification with broth culture given 16 days later.—MALCOLM WOODBINE.

DEDIÉ, K. (1949.) Die säurelöslichen Antigene von *Erysipelothrix rhusiopathiae*. [The acid soluble antigens of *E. rhusiopathiae*.]—*Mh. Vet.-med.* 4. 7-10. 1573

D. stated that *E. rhusiopathiae* strains were not serologically and immunologically uniform. He observed that using acid extracts from washed bacteria, sera from rabbits that had been given a preliminary injection of formol-killed *E. rhusiopathiae* followed by living culture, yielded the highest titre precipitin antisera; 74 strains were used. Differentiation of strains as to immunological value was based on results obtained by this method and not by animal vaccination tests. Sixty-three of the antisera precipitated the homologous acid extracts and fell into two groups of 36 (type A) and 27 (type B) respectively. Extracts of all the 74 strains were tested with A and B antiserum. Of the 11 strains which had not produced good titres six contained the acid soluble antigen of group A and five not containing either A or B were named N forms. These results were confirmed by agglutination and complement fixation tests. The B form is the only one suited for preparation of killed bacterial vaccine after Traub.—E. G.

FISH, N. A., & SCHRODER, J. K. (1949.) A report on the laboratory diagnosis of listerella infection in a cross-bred heifer.—*Canad. J. comp. Med.* 13. 295-302. 1574

A heifer became ill about one week after calving, with symptoms resembling those of milk fever. It was killed and examined P.M. Histopathological changes were confined to the medulla oblongata, from which *Erysipelothrix* (*Listeria monocytogenes*) was isolated on horse blood agar. Rabbits died following intravenous injection of a light suspension. A sub-lethal dose given by the intra-ocular route produced conjunctivitis and keratitis. A differential blood count revealed that 20% of the white corpuscles were monocytes. A g. pig which was given a similar instillation of culture also developed a marked keratitis and conjunctivitis.—R. GWATKIN.

JENSEN, R., & MACKEY, D. R. (1949.) Listerellosis in cattle and sheep.—*J. Amer. vet. med. Ass.* 114. 420-424. 1575

An account of outbreaks of *Erysipelothrix* (*Listeria monocytogenes*) infection on 39 farms in

Colorado during 1946-47 and 1947-48. The percentage of infection, in flocks of over 50 animals, was 8.9% for 7,100 sheep (3.3-15.0%) and 1.3% for 85,603 cattle (0.03-7.5%). Affected animals soon became semi-comatose, prostrate, and opisthotonos was common, with death in 3-5 days. No gross lesions were evident on P.M. examination and laboratory confirmation was by the isolation of *E. monocytogenes* from the brain. Treatment was limited to cattle and consisted of 500,000-1,000,000 units of penicillin, intravenously or intramuscularly, in saline with concurrent 1,000,000 units intramuscularly in oil, repeated at 18-24 hours. Some animals were also given sulphanilamide orally, at 0.5 g. per lb. body weight, twice daily. Of 120 cattle treated, 43 died. Early treatment is advisable, although some animals recovered without therapy.—M. W.

RYFF, J. F., & LEE, A. M. (1948.) Listerellosis—report of an outbreak in Wyoming sheep and preliminary, experimental therapy in rabbits.—*Amer. J. vet. Res.* 9. 147-151. 1576

An outbreak occurred in sheep of *Erysipelothrix* (*Listeria monocytogenes*) infection and was followed by several suspected cases in steers on the same farm. A number of therapeutic agents, including streptomycin, penicillin and sodium sulphamerazine, sulphathiazole or sulphapyridine were tried on experimentally infected rabbits. Sodium sulphapyridine and penicillin gave the most promising results.—MALCOLM WOODBINE.

JAMIL, M., & STAFSETH, H. J. (1949.) Pullorum disease studies in turkeys. II. Zone reactions in the tube agglutination test.—*Poult. Sci.* 28. 571-576. 1577

Using a polyvalent antigen and serum from artificially infected turkeys duplicate agglutination tests were carried out at 37° and at 56°C. There was slight evidence of the production of zones of inhibition at 37°C., whereas well marked zones appeared in 1:10 and 1:20 dilutions at 56°C. When the density of the antigen was reduced by one-half zone phenomena became more pronounced and occurred even in 1:40 dilution. Heating the sera for 15 min. at 56°C. did not materially alter the position of the zone, although the intensity of the inhibition was increased. When heated to 65°C. for half an hour little or no agglutination occurred. There was a high agglutinin content in the supernatant fluid from tubes in which the zone phenomenon occurred when this fluid was tested against different antigens.

It is suggested that in pullorum testing in turkeys two dilutions, of 1:25 and 1:100, should be employed.—D. LUKE.

ROMERO Y ORTEGA, N. (1948.) Brucellosis en

Chile. [Brucellosis in Chile.]—*Rev. Chile. Hig. Med. prev.* 10. 227-236. [Abst. from abst. in *Bull. Hyg., Lond.* 24. 756. (1949).] 1578

An account of human brucellosis in Chile. In a series of 104 cases that occurred over a period of three years more than half were shepherds, owners of flocks, milkers, etc., and examination showed 26 % of goats to be positive, 19 % of sheep, 88 % of slaughterhouse cattle and 88 % of slaughterhouse pigs.

SCOTTI, G. (1948.) *La paramelitense. [Brucella paramelitensis infection.]—Ann. d. San. Pubblica.* 9. 1746-1771. [Abst. in *Bull. Hyg., Lond.* 24. 817. (1949), copied *verbatim*. Signed: J. C. BROOM.] 1579

A summary is given of the work of other observers which proved that the so-called *Brucella paramelitensis* is in fact the rough (R) variant of *Br. melitensis*. The author describes 6 patients, suffering from undulant fever, from whom strains of *Br. melitensis* were isolated from venous blood or sternal marrow between the 80th and 140th days after onset of disease. Although the patients' sera all contained agglutinins against the smooth S variant, the strains, with one exception, were in the R state. The single smooth strain was recovered from the sternal marrow of one patient whose blood, on the same day, yielded a rough variant.

The strains were evidently virulent, because all the cases were severe, the illness lasting for 3 to 7 months in different patients. The symptoms and course of the disease in each patient are described in detail, and discussed at length, though to no particular purpose.

The hypothesis is put forward that certain strains of *Br. melitensis* are inherently liable to the S→R variation, and that the presence of anti-S immune bodies in the blood may induce the variation *in vivo*.

BERMAN, D. T., & BEACH, B. A. (1949.) *Studies on repeated vaccination of cattle with Brucella abortus strain 19. I. The agglutinin response of animals vaccinated as calves and revaccinated as young adults.—Amer. J. vet. Res.* 10. 208-213. 1580

A group of 64 heifer calves, approximately eight months old and negative reactors to the agglutination test, were vaccinated with strain 19 and divided at random into three groups of 19, 22 and 21 animals respectively. The first group served as controls, the second group were revaccinated after six months and the third after 12 months. Revaccination caused a rapid rise in titre up to an average of 1:1,600, then a fall to 1:100 within three months and a level of about 1:25 at the end of the first pregnancy, at which

time there was only one reactor in each of the revaccinated groups. In the control group there was the typical fall in titre and a negative reaction after 12 months. Revaccination did not appear to have any deleterious effect on the first pregnancy.

The results were complicated by spontaneous infection with a virulent strain of *Br. abortus*. Four animals became infected and were removed from the herd and slaughtered: one was in the group given one injection, and three were in the revaccinated groups. No reactors were found in the herd ten months after the last of the four infected animals was removed, but the effects of this spontaneous infection, the source and degree of which is not known, must be considered when evaluating the effects of further experiments with strain 19 in the herd.—E. G. WHITE.

LINDLEY, D. C., & LANDER, J. R. (1949.) *Observations on the use of Brucella abortus strain 19 in swine—including multiple intradermal doses.—J. Amer. vet. med. Ass.* 115. 359-363. 1581

The authors describe results obtained during 1946 following the use of strain 19 in some pigs in a large mixed herd in which infection with *Br. suis* existed. Neither cultural work nor experimental infection was carried out. Infection was eradicated from the herd within a period of nine months, a result which is attributed to unit-segregation. A total of 48 gilts received strain 19. A single subcutaneous inoculation of 5 ml. of the vaccine did not protect against natural infection: peak titres occurred 1-2 weeks after vaccination. Gilts given repeated intradermal inoculations of strain 19 produced satisfactory litters and had no breeding troubles, but positive evidence of immunity was not obtained. When the disease had been eradicated, presumably by isolation and segregation, vaccination was discontinued and it is not possible to determine the part which vaccination played in the control of the infection.—E. G. WHITE.

KYGER, E. R., & HADEN, R. L. (1948.) *Brucellosis and multiple sclerosis. Cutaneous reactions to brucella antigens.—Amer. J. med. Sci.* 216. 689-693. [Abst. in *Bull. Hyg., Lond.* 24. 326. (1949.), copied *verbatim*. Signed: R. LOVELL.] 1582

Five hundred and sixty cases of chronic brucellosis [in human beings—Ed. V.B.] were reviewed in order to determine the frequency of neurological symptoms, and in 28 of them there were sensory and motor changes or disturbances in the 2nd, 6th or 8th cranial nerves; in two additional patients, the fully developed picture of disseminated sclerosis was present.

To test the hypothesis that disseminated sclerosis might be a central nervous system manifestation of chronic brucellosis, 118 consecutive cases of disseminated sclerosis were examined for cutaneous activity to *Brucella* antigens. The following results were obtained :—

Test	Total cases	Positive	Percentage
Killed <i>Brucella</i> bacteria...	118	115	97
Brucellergen ...	55	53	96
Polyvalent <i>Brucella</i> serum	55	55	100
<i>Brucella abortus</i> serum...	55	55	100

There was no evidence that an abnormal degree of cutaneous sensitivity was present in a group of the above patients who were tested with other substances. Two control groups were also studied and 12 of 56 rural residents having a variety of clinical conditions reacted with the killed suspension; 29 of 42 having neurological conditions other than disseminated sclerosis or encephalomyelitis also reacted with this suspension.

The greatest frequency of disseminated sclerosis in America is in the Pacific North-West and in the Great Lakes basin and brucellosis of the *abortus* type is also prevalent in these areas. The possibility therefore that there is a connexion between brucellosis and disseminated sclerosis warrants further study.

SANDERS, E., & HUDDLESON, I. F. (1950.) The influence of atmospheric gases on the multiplication of *brucella*.—*Amer. J. vet. Res.* 11. 70-75. [Authors' summary slightly amended.] 1583

Results from the study of the influence of atmospheric gases on the multiplication of the three species of *Brucella* in liquid culture media show conclusively that controlled atmospheres are equally important as the medium constituents. Rates of multiplication and cell counts are greatly increased when these organisms are grown in an atmosphere of pure oxygen.

A practical liquid medium is described which, when exposed to pure oxygen and constantly agitated, produces large live cell populations of a pure growth phase of the *Brucella*.

WASHBURN, A. M., & TUOHY, J. H. (1949.) The changing picture of tularemia transmission in Arkansas. A study of 704 case histories.—*Sth. med. J.* 42. 60-62. [Abst. in *Bull. Hyg., Lond.* 24. 326. (1949), copied *verbatim*. Signed: R. LOVELL.] 1584

The data obtained from 704 cases of tularemia occurring in Arkansas during 1938 to 1948 are tabulated and it is shown that the disease is mainly tick-borne. The incidence is increasing

and it appears as if this is in part due to the greater number of infected ticks. It is an occupational hazard and the term "rabbit fever" is not a good one.

The site of the initial lesion and the seasonal distribution of the disease support the observation that it is mainly tick-borne; of the 704 cases, 391 were conveyed by ticks (56 per cent.) and the highest incidence of the disease was in May and June. Furthermore, 299 patients were agricultural workers and 203 of these were infected from ticks. The common site of the initial lesion was somewhere on the lower limb. In those infected from rabbits, 61 of 299 agricultural workers and 75 of 159 housewives, the common site of the lesion was on the hand.

The chief value of this study is to illustrate how the concept of tularemia transmission and control must be rearranged not only in Arkansas but probably elsewhere.

BIND, P. (1945.) Contribution à l'étude de l'entéro-toxémie chez le chien. [*Enterotoxaemia (Clostridium welchii infection) in the dog.*]—*Thesis, Alfort*. pp. 69. 1585

A haemorrhagic gastro-enteritis, with high body temperature icterus, prostration, tremors and convulsions, is caused in dogs by *Cl. welchii*. An acute form with 80-90% mortality develops in 3-5 days. There is a fatal hyperacute septicaemic form, with copious vomiting of blood and rapid onset of coma. Prophylaxis is discussed.—N. D.

WEBB, M. (1948.) The influence of magnesium on cell division. I. The growth of *Clostridium welchii* in complex media deficient in magnesium. II. The effect of magnesium on the growth and cell division of various bacterial species in complex media. III. The effect of magnesium on the growth of bacteria in simple chemically defined media.—*J. gen. Microbiol.* 3. 275-289; 410-417; & 418-424. [Author's summaries copied *verbatim*.] 1586

I. The production of filamentous forms of *Clostridium welchii* which occurs in media containing certain commercial and chemically treated peptones is due to a deficiency of ionized magnesium. Such filaments revert to cells of normal morphological appearance on subculture in a medium containing free magnesium ions, but the change cannot be brought about by the presence of metallic ions other than magnesium. It is, therefore, suggested that the latter is essential for the activity of the cell-dividing mechanism.

The presence of a growth-inhibitory factor in certain peptones has been established. The active agent appears to be a fatty acid and may be extracted from acidified peptone solutions with ether or chloroform. The presence of the

inhibitory substance in peptone markedly decreases the crop yield of *Cl. welchii* but has no direct influence on the production of filaments.

II. Magnesium is essential for the normal cell division of bacilli in complex media. Under conditions of magnesium deficiency or magnesium excess, cell division is inhibited and filamentous cells may be formed. Under the same conditions there is no appreciable interference with the division of chromatinic bodies. The magnesium requirements of the Gram-positive bacteria are considerably greater than those of the Gram-negative bacteria, possibly because the former incorporate magnesium into the structure of the Gram complex.

III. In simple chemically defined media all of 15 bacteria failed to grow in the complete absence of magnesium. The concentration of magnesium for maximum growth was dependent upon the Gram reaction of the individual species examined, the magnesium requirements of the Gram-positive organisms being some ten times greater than the requirements of the Gram-negative organisms. In contrast to the observations made in more complex media (peptone water), normal cell division occurred in chemically defined media containing suboptimal amounts of magnesium. It is suggested that magnesium is involved in the synthesis of bacterial protoplasm as well as cell division and, in simple chemically defined media, the synthetic reactions require the higher magnesium concentration.

WEBB, M. (1948.) **The action of lysozyme on heat-killed Gram-positive micro-organisms.**—*J. gen. Microbiol.* 2. 260–274. [Author's summary copied *verbatim*.] 1587

The change in the Gram staining reaction which occurs when heat-killed Gram-positive *Clostridium welchii* and *Staphylococcus albus* are incubated with lysozyme is due to the removal of the ribonucleic acid component of the Gram complex, and is brought about by the hydrolysis of certain sugar linkages in polysaccharides located at the cell surface.

SEVITT, S. (1949.) **Source of two hospital-infected cases of tetanus.**—*Lancet.* 252. 1075–1078. [Author's summary copied *verbatim*.] 1588

A bacteriological investigation into a hospital source of two cases of tetanus [in human beings—Ed. V. B.] is described.

Building repairs were being done on part of the theatre suite, and here animal hair was being mixed with plaster powder. The hair gave a heavy growth of various strains of anaerobic sporing bacilli, including toxigenic strains of *Cl. tetani*. Some of the other strains produced experimentally muscle gangrene in guinea pigs.

This plaster hair is considered to have been the original source of the tetanus infection.

From dust of floor sweepings of various parts of the theatre suite and from specimens of talcum powder (glove powder) toxigenic strains of tetanus and other anaerobic sporing bacteria were isolated. This is thought to have been the result of dissemination of spore-containing dust originally contaminated from the plaster-hair.

The dissemination was probably brought about by cross-currents of air in the theatre, and these were produced by exhaust ventilation in the theatre suite.

Clostridial strains, including toxigenic *Cl. tetani*, were isolated from talcum powder autoclaved at 20 lb. pressure and ready for use. This imperfect sterilisation was considered to have arisen from the tight packing of the powder packets in the sterilising drum. The contaminated talc (glove powder) was probably the final vehicle whereby tetanus reached the patients' wounds.

Some of the implications are discussed, and certain recommendations on theatre ventilation and sterilisation of talcum powder are made. In particular the general installation into operating-theatres of plenum-type ventilation systems designed to control the air hygiene of the theatre is advised.

MUELLER, J. H., & MILLER, P. A. (1949.) **Inhibition of tetanus toxin formation by D-serine.**—*J. Amer. chem. Soc.* 71. 1865–1866. [Abst. in *Bull. Hyg., Lond.* 24. 817. (1949), copied *verbatim*. Signed: B. STOCKER.] 1589

It has previously been observed that the yield of toxin from cultures of *Cl. tetani* is depressed by the presence of racemic serine in the medium; it has now been shown that this effect is produced by D-serine only: L-serine has no inhibitory action (and fails to reverse the depressing action of the unnatural isomer).

AINSWORTH, G. C. (1948.) **Fungous diseases of animals in Britain.**—*Vet. Rec.* 60. 405–406. 1590

The author surveyed the nomenclature of the fungi responsible for diseases of animals in Britain. The nomenclature may be taken as authentic and that is the importance of this article.—R. M. LOOSMORE.

PRIOR, J. A., COLE, C. R., & TORBET, V. (1949.) **An evaluation of the histoplasmin reaction in the detection of naturally occurring histoplasmosis in dogs.**—*Publ. Hlth Rep., Wash.* 64. 1562–1566. [Authors' summary slightly modified.] 1591

837 dogs [at the Ohio State Veterinary College] were tested with histoplasmin and only 5 reacted (0.59 percent).

Of five dogs reacting to histoplasmin, three proved to have active naturally occurring histoplasmosis. All failed to react to tuberculin. Attempts to demonstrate pathogenic agents other than *H. capsulatum* were unsuccessful.

It appears that the histoplasmin skin test is more useful in the detection of naturally occurring active histoplasmosis in dogs than it is in other species.

One dog, in the terminal stages of acute histoplasmosis, diagnosed by blood culture and confirmed at autopsy by recovery of a pure culture of *H. capsulatum* from liver, spleen, lymph nodes, lung and ascitic fluid, failed to react to histoplasmin on two occasions.

LAMIKHOV, K. F. (1946.) [Culture media for *Cryptococcus farciminosus*.]—*Veterinariya, Moscow*. 23. No. 10-11. pp. 15-17. 1592

Eighteen strains of *Cryptococcus farciminosus* were grown in sterilized moist hay, sedges and reeds, and two of these strains in sterilized horse dung. L. concluded that the organism could grow on such plants and in horse dung, and so be spread to animals.—F. A. A.

NICKERSON, W. J., & WHITE, S. J. (1948.) Therapeutic value of ammoniacal silver nitrate in fungous infections of the nails.—*Arch. Derm., Chicago*. 57. 935-941. [Abst. in *Bull. Hyg., Lond.* 24. 329. (1949), copied *verbatim*. Signed: H. T. H. WILSON.] 1593

The thickness of the nail tissue and its comparative impermeability cause infections of the nails to be among the most resistant to treatment of the superficial mycoses.

The invading fungus, usually *Candida albicans* or one of the species of dermatophytes, such as *Trichophyton rubrum* or *Epidermophyton floccosum*, penetrates the nail along its free edge and grows towards the matrix. In time the entire nail, nail bed and matrix may become involved.

Ammoniacal silver nitrate is not only fungicidal, but has the property of penetrating keratin in general, and nail tissue in particular, to a high degree. In a preliminary experiment with laboratory animals the authors demonstrated that this substance was fungicidal for spores and mycelia, and provoked no abnormal reaction in dry skin. Sixteen cases of proved onychomycosis were later treated by weekly applications of the solution to the affected nails. Penetration of the nail tissue was demonstrated by X-rays and by histological examination.

Nine of the 16 patients were cured after one to eight applications, and the remaining 7 were improved. No unfavourable reactions occurred.

RANDALL, R., WETMORE, P. W., & WARNER, A. R., Jr. (1949.) Sonic-vibrated leptospirae as

antigens in the complement fixation test for the diagnosis of leptospirosis.—*J. Lab. clin. Med.* 34. 1411-1415. [Authors' conclusions copied *verbatim*.] 1594

A complement fixation test for the diagnosis of leptospirosis (Weil's disease) utilizing antigens obtained from sonic-vibrated leptospirae has been described.

Sera from human cases of leptospirosis caused by *L. icterohaemorrhagiae* and *L. grippityphosa* reacted with *L. canicola* and *L. icterohaemorrhagiae* antigens to titers regarded as specific for leptospirosis. The specificity of the complement fixation test for the two species of leptospirae occurring in the United States has been demonstrated. The value of this complement fixation as a simple routine laboratory procedure for the diagnosis of leptospirosis is discussed. It appears that complement-fixing antibody might be detectable before agglutinins could be demonstrated.

VAN THIEL, P. H. (1948.) The rôle of frogs in the epidemiology of Weil's disease.—*Antoni van Leeuwenhoek. J. Microbiol. & Serol.* 14. 129-144. [Abst. in *Bull. Hyg., Lond.* 24. 327-328. (1949), copied *verbatim*. Signed: J. C. BROOM.] 1595

In previous experiments the author showed that freshwater fish play no part in the spread of leptospirosis. The present communication deals with similar observations on frogs, 99 *Rana fusca* and 10 *R. esculenta*. Serum was tested for the presence of agglutinins to *Leptospira icterohaemorrhagiae*, complete and incomplete biotypes, *L. canicola*, *L. grippityphosa*, *L. sejroe*, and a number of strains of *L. biflexa*. The serum of all the frogs except 2 *R. esculata* agglutinated the incomplete biotype of *L. icterohaemorrhagiae* in dilutions of 1/4 or higher. The other biotype and the other species were agglutinated by varying, lesser numbers of the sera. No leptospirae were isolated by the inoculation of frog kidney suspensions into mice. Only after the intraperitoneal injection of large amounts (2 ml.) of a culture of a virulent strain of *L. icterohaemorrhagiae* could leptospirae be isolated for a few days from the blood, liver and kidneys. The frogs showed no signs of illness, but the treatment increased the antibody titre of the serum. It appears therefore that frogs, like fish, play no part in the epidemiology of Weil's disease.

The interesting observation was made that all infected rats from Leiden were carriers of the incomplete biotype of *L. icterohaemorrhagiae*.

SCHÜFFNER, W. A. P., & BOHLANDER, H. (1948.) Die ersten Ergebnisse der Schlammeber Forschung in den Niederlanden. [The first results of investigations on *Leptospira grippityphosa* infection (mud fever) in the Nether-

lands.]—Antonij van Leeuwenhoek ned Tijdschr. Hyg. Microbiol. 9. 19–81. [Abst. from abst. in Bull. Hyg., Lond. 24. 758–759. (1949).] 1596

In 1941, a small epidemic of 10 cases in children who had caught and been bitten by bank voles, *Microtus arvalis*, led to the recognition of the presence of *L. grippo-typhosa* infection in man in Holland. Only in exceptional circumstances is there much contact in Holland between man and this animal, so only sporadic cases normally occur. The disease is mild, without any particular characteristic symptom, and may therefore easily go unrecognised.

The distribution of the voles is very irregular. Whereas they are very rare in most parts, some districts of Friesland were found to be heavily infested, and most of the material examined came from that area. Infection is probably by contact with infected urine. The "nests" of leptospirae characteristically present in the kidneys of rats infected with *L. icterohaemorrhagiae*, were seldom noted. The rates of infection of young and old mice were 24 and 46%, whereas in rats they were 5 and over 50% respectively.

Up to the end of 1942, 21 human cases had been diagnosed in Holland. All the patients had been bitten, so providing a portal of entry for leptospirae from the urine. In two cases the disease was suspected during the first few days of illness, and leptospirae were grown from the blood. The other cases were diagnosed on serological findings, and leptospirae were cultured from the urine of two of these patients.

The infection rate in voles in Holland is much higher than the incidence in other countries where the disease in man is much more prevalent. No explanation of this disparity is at present available.

EAGLE, H., & MUSSELMAN, A. D. (1949.) The slow recovery of bacteria from the toxic effects of penicillin.—*J. Bact.* 58. 475–490. [Authors' summary copied *verbatim*.] 1597

Penicillin has been shown by previous workers to have bacteriostatic effect on staphylococci that persists for a number of hours after the removal of the drug. As here shown, this bacteriostatic effect is not peculiar to staphylococci, but has been observed with a number of bacterial species (β -hemolytic streptococci of groups A and B, β -hemolytic streptococci, *Streptococcus faecalis*, *Diplococcus pneumoniae*, *Staphylococcus aureus*, and *Staphylococcus albus*). The bacteriostatic effect of penicillin preceded the death of the significant proportion of the organisms, and, like the latter, was observed only under conditions favorable to the growth of the organisms. The recovery of

the damaged bacteria required a similarly favorable environment.

The time required for this sublethal toxic effect to become manifest varied with the concentration of penicillin to which the organisms had been exposed and was correlated with the rate at which the bacteria were subsequently killed by the drug. With some strains rapidly killed by penicillin, its initial bacteriostatic effect was apparent within less than 5 minutes after the addition of penicillin. There was, however, no demonstrable correlation between the "sensitivity" of the several organisms to penicillin (*i.e.* the concentrations necessary to exert either a bacteriostatic or bactericidal effect) and the rate at which these toxic effects were manifested. The time required for the bacteria to recover from the toxic effects of penicillin and resume multiplication increased with the time for which they had previously been exposed to the drug. The maximum duration of this recovery period varied from 3 to 8 hours in the several species here studied. The implications of these observations with respect to the mode of action of penicillin and the therapeutic significance of the recovery period, are discussed in the text.

TURNER, A. W. (1949.) Bacterial oxidation of arsenite.—*Nature, Lond.* 164. 76–77. 1598

Fifteen strains of *Pseudomonas* tolerating up to 0.1 M of arsenite have been isolated from cattle-dipping fluids. After a lag phase in the presence of substrate the cells develop the ability to oxidize arsenite into arsenate. A dehydrogenase has been isolated from crushed organisms thus adapted, but not from non-adapted ones.—NESTA DEAN.

REYNIERS, J. A., TREXLER, P. C., ERVIN, R. F., WAGNER, M., LUCKEY, T. D., & GORDON, H. A. (1949.) A complete life-cycle in the "germ-free" bantam chicken. [Correspondence.]—*Nature, Lond.* 163. 67–68. 1599

The successful rearing of chickens to maturity, the production and hatching of eggs all in "germ-free" conditions is reported. The essential steps in the process were as follows: eggs containing viable 20-day embryos were dipped in 1% mercuric chloride at 38° C. for 8 min. after they had been scrubbed in a detergent solution. They were then hatched in a germ-free apparatus. All food was sterilized at 123° C. for 20 min. The composition of the semi-synthetic diet is given. Checks for contamination were made twice a week. Twelve chicks were hatched of which one died and eight were killed for bacteriological examination. Three were reared to maturity. Egg-laying started 190 days after hatching and one chick has been reared from the first three eggs laid.—M. C.

See also absts. 1698 (*Fusiformis necrophorus*); 1733 (*Pasteurella*); 1738 (*E. rhusiopathiae*); 1791 (*S. tenessee*); 1792 (staphylococci); 1800 (viability of bacteria in semen); 1801 (control of bacteria in semen); 1807 (collargol and protargol and bacteria); 1816 (staining); 1817 (cultures); 1818 (growth); 1819 (estimating bacterial contamination on crockery); 1820 (on swabs); 1837 (book, microbiology); 1838 (book, TB.); 1839 (book, mycology); 1843 (book, animal diseases in S. Africa); 1844 (book, pig diseases).

DISEASES CAUSED BY PROTOZOAN PARASITES

ANON. (1946-47.) Descrizione della prima infezione contratta in laboratorio da *Trypanosoma evansi*. [First recorded (human) laboratory infection by *Trypanosoma evansi*.]—*Mem. Acad. Sci. Ist. Bologna*. Ser. 10. 4. pp. 1-19. [Abst. in *Trop. Dis. Bull.* 46. 1015. (1949), copied *verbatim*. Signed: H. HAROLD SCOTT.] 1600

This record is of historical interest. In April, 1912, Professor Lanfranchi was studying animal trypanosomes, *T. brucei* and *T. evansi*. He was drawing up blood from a heavily infected guineapig with a pipette when the cotton-wool plug became dislodged and, soaked in blood, entered his mouth. He was suffering at the time with an ulcerated left tonsil. He spat out the plug but continued at his work thinking that there was no risk as the trypanosome with which he was working was "an animal trypanosome and not pathogenic for man". Later he gargled. Thereafter, he suffered from access of fever (there had been rise of temperature for some time owing to the tonsillitis) and sweats "so profuse that it passed through the mattress and wetted the floor" [as mentioned below the patient's recollection for recent events at the time was poor], insomnia, tachycardia paroxysmal in character, enlargement of liver and spleen and lymphatic glands, with loss of memory for recent events and pain in the thumbs and forearms sufficiently acute in the right to prevent his using the right hand for picking up and holding objects. Trypanosomes were present in his blood and these were measured by Mesnil and others: much detail is given of the comparison between these and those of human sleeping sickness (called in this paper Castellanosis). Treatment by atoxyl brought about cure. By measurements and by serological tests Professor Mesnil concluded that the trypanosome which infected Professor Lanfranchi was *T. evansi*.

CLARK, H. C. (1948.) *Equine trypanosomiasis—Murrina of Panama*.—*Proc. 4th Internat. Congr. Trop. Med. Malar.* pp. 1842-1850. 1601

This is an account of the ecology, clinical features and geographical distribution of the disease in Panama. It is of special interest for the information on the rôle of the vampire bat, *Desmodus rotundus murinus* in transmission. In the discussion Sandground, J. H., raised the question of the taxonomy of the causal trypanosome. *Trypanosoma venezuelense* is probably identical with *T. hippicum* (and probably with *T. equinum*) and all three seem to differ little from *T. evansi*. S. was of opinion that an effort should be made to solve this question.

Hatzioles, B., referred to the presence of this

disease in Greece in 1936, but it is apparent from his remarks that he was confusing murrina with dourine caused by *T. equiperdum*.—M. C.

MÜLLER, J. (1949.) Komplementbindungsundersøgelser af danske heste med henblik på ondartet beskelesyge (dourine). [Complement-fixation tests for dourine in Danish horses.]—*Nord. vet.* 1. 895-904. [English summary slightly amended.] 1602

A review is given of the literature on the diagnostic value of the complement fixation test for dourine.

The antigen employed in the present tests was prepared from the blood of white rats infected with *Trypanosoma equiperdum*. The rats were killed at the height of the infection and the blood was collected in 1% sodium citrate in physiological saline, filtered through glasswool and centrifuged for 20-25 min. at 3500 revolutions per min.

Under this treatment the trypanosomes collect on the surface of the erythrocytes. The supernatant fluid and a greater part of the layer of erythrocytes are pipetted off cautiously, and the mass of trypanosomes is washed and centrifuged several times with saline, and finally with distilled water. The washed trypanosomes are mixed with equal parts of 50% glycerin in saline.

This concentrated antigen is serviceable for 7-8 months when it is stored at -18°C. For the diagnostic tests it is used in dilution 1:20.

In complement fixation tests on 4602 blood samples (about 2500 from breeding stallions) 4 gave a distinctly positive reaction for dourine. The animals here concerned were a stallion left by the German army at the capitulation and 3 mares which had been served by this stallion. Another German mare gave a weak positive reaction in the first test and a negative reaction in 5 subsequent tests. None of the 5 animals showed any definite symptoms of dourine, and trypanosomes were not demonstrated.

The 4 animals with a decidedly positive reaction were killed as suspect of suffering from notifiable infectious disease.

LAUNOY, L., & JEANPIERRE, C. (1948.) Essais sur l'action préventive du diamidinodiphenoxypentane administré *per os* sur la trypanosomose expérimentale à *Trypanosoma equiperdum* du rat. [Preventive activity of diamidinodiphenoxypentane given *per os* against experimental *T. equiperdum* infection in rats.]—*Bull. Soc. Path. exot.* 41. 25-28. 1603

Experiments made on rats with advanced and early infections indicated that single doses *per os* possessed greater preventative than curative action. Doses of 5, 7.5, 10, 15 and 20 mg. per

100 g. body weight cleared heavily infected animals within 48 hours, although all relapsed within 10-14 days. In ten rats with early infection, however, given 10 mg. per 100 g. body weight—all cleared as before—seven had relapsed after 22 days and all ten by 27 days.—M. WOODBINE.

TOMASONI, O. (1948.) Sul morbo coitale maligno osservato nel basso veronese e curato con il "Farma 939." [*Trypanosoma equiperdum* infection in Italy, cured with "Farma 939."]
—*Nuova Vet.* 25. No. 2. pp. 59-64. 1604

In ten mares with *Trypanosoma equiperdum* infection, T. successfully used a drug, "farma 939," which was identical with suramin, as the sole therapeutic agent.

He claims that striking results were achieved by intramuscular injections of 2 g. per 100 kg. body weight, whether the treatment was started early or late in the course of the disease.—G. P. M.

GUYAUX, R. (1948.) Observations cliniques sur l'emploi en milieu indigène du dimidium bromide dans un foyer actif de trypanosomiase bovine. [Clinical observations on the use of dimidium bromide (phenanthridinium 1553) in bovine trypanosomiasis.]—*Ann. Soc. belge. Méd. trop.* 28. 179-188. 1605

Dimidium bromide (phenanthridinium 1553) is active against bovine infections caused by *T. congolense*, giving an 88.23% level of cures. The 7.84% relapse cases were treated with a second injection of 2 mg. per kg., the intravenous being preferred to the subcutaneous route. The price of treatment is not prohibitive.—M. W.

PELLEGRINI, D. (1948.) *Trypanosoma simiae* (brucei) infection of the camel.—*E. Afr. agric. J.* 13. 207-209. 1606

P. describes natural cases of infection in camels with lesions similar to those of other acute trypanosomiasis. The disease may be of hyperacute, acute or chronic type. Absence of pathogenicity for cattle is the crucial biological characteristic, but the monkey, g. pig, squirrel and dog are also unaffected. The organism is, however, lethal to the pig. Two cases of experimental transmission to camels are described. Infection is always fatal in camels.—MALCOLM WOODBINE.

LEWIS, E. A. (1949.) The effect of antrycide on *T. vivax* in tsetse flies.—*E. Afr. agric. J.* 15. 57-60. 1607

Glossina pallidipes, infected with *Trypanosoma vivax*, were allowed to feed on cattle which had been treated with antrycide. The development, viability, infectivity and virulence of the protozoan parasites did not appear to be impaired.

—FERGUS S. McCULLOUGH.

HAWKINS, P. A. (1949.) *Eimeria meleagridis* Tyzzer, 1929 in the turkey.—*J. Parasit.* 35. 21.

[Only abst. given, copied *verbatim*.] 1608

This species is the most pathogenic of the coccidia occurring in the turkey, and experimentally produces a high mortality in poulters two to three weeks of age. It is found throughout the small intestine and to a lesser extent in the rectum, but has not been found to localize in the cecum. It is most numerous in the middle third of the small intestine. The organism is found superficial to the nucleus of the epithelial cell, with none having been observed in the crypts. The first asexual generation is completed two and one half to three days after infection. The second generation is completed about four days after infection and is asexual. The third generation is predominantly sexual and oocysts are passed in the feces towards the end of the fifth day of infection. A fourth generation, initiated by scattered third generation merozoites, occurs. However, the course of this infection in the tissues has not been followed past the eighth day after the administration of oocysts.

The oocyst has produced four sporoblasts in 18 to 20 hours after passage in the feces. At this time the small globular inclusion bodies may be seen, there being one to three present. Sporulation is not completed until two days after passage when maintained at room temperature.

The histopathological picture presented by this infection is remarkable. Five days after infection the epithelium from the tips of the villi, particularly in the middle third of the small intestine, has been lost. Only the intact basement membrane separates the lamina propria from the lumen of the intestine. Large dilated capillaries are noted in direct contact with the membrane, yet no hemorrhage is observed. In severe infections no parasites are seen in the middle third of the small intestine due to the loss of epithelium. In birds that survive, the regeneration of epithelium is very rapid.

BRION, A. (1947.) Les piroplasmoses des grands animaux en France métropolitaine. [The piroplasmoses of farm animals in France.]
—*Ann. Parasit. hum. comp.* 22. 296-313. 1609

The incidence and geographical distribution of piroplasmosis in France are described and illustrated by a series of maps.

The only species which are common are *Babesiella bovis* [*Babesia divergens*]; *Babesiella ovis* [*Babesia ovis*]; and *B. caballi*. It is doubtful whether *B. bigemina* exists in France. *Theileria mutans* has been recorded on three occasions, but appears to be non-pathogenic and of no practical importance. *Anaplasma marginale* occurred accidentally in France on one occasion in cattle which had been inoculated against F. & M. disease with a needle which has been used to immunize against

anaplasmosis cattle which had been destined for export to South America. This outbreak was suppressed. Spontaneous cases of the disease were seen again in 1935. The symptoms were mild, consisting of loss of condition and anaemia. The condition is rare. Infection has also been seen in sheep.—M. C.

DIESEL, A. M. (1948.) The campaign against East Coast fever in South Africa.—*Onderstepoort J. vet. Sci.* 23. 19–31. 1610

The control of East Coast fever since it was first recognized in the Union of S. Africa in 1902 is described. The campaign falls into three periods, namely, that from 1902–1910 prior to the use of short-interval dipping; the short-interval dipping period from 1910–1929; and the period of intensive control from 1929 onwards.

Short-interval dipping alone failed to eradicate the disease. The period when this method was relied upon was characterized by intervals of apparent success followed by recrudescences. It became obvious that in addition to short-interval dipping some further measures were required. The period of intensive control with increased staff was instituted. The features of this campaign were, (a) early and definite diagnosis, (b) intimate and short-interval checks of numbers of cattle with registration of births, deaths and all movements, not only on infected farms but also in all areas where the disease had, in recent years, been troublesome, (c) close supervision of dipping on both infected and susceptible farms, (d) close control over movements of cattle by a permit system. As an adjunct to these measures, slaughter was used to eliminate isolated outbreaks.

In carrying out this policy as many as 500 dipping inspectors and over 150 stock inspectors under a supervising stock inspector were employed. Early diagnosis involved the examination of very large numbers of blood and/or spleen smears. On an average, 200 smears were examined per day per examiner, year in and year out. Trouble was often experienced in differentiating microscopically *T. parva* from *T. mutans*.

Complete eradication has not yet been achieved, but there has been great improvement in the past ten years. The Transvaal has been free from the disease since 1944. Natal has now only three infected areas.—M. C.

DELPY, L. P. (1949.) Recherches effectuées en Iran sur *Theileria annulata* Dschunkowsky et Luhz, et sa transmission dans les conditions naturelles ou expérimentales. [Natural and experimental transmission of *Theileria annulata* infection in Iran.—*Bull. Soc. Path. exot.* 42. 285–294. 1611

Theileria parasites are commonly found in

the indigenous cattle of Iran, but illness caused by them is very rare. In 1935 16 breeding bulls were imported from France. They all contracted theileriasis and 12 of them died within one month of arrival. In 1936 five bulls were imported from Caucasia in Russia which were stated to be pre-munized against the theileriasis of that country. Within one month four developed acute theileriasis of which one died and three recovered after treatment. As a result of these experiences, a study was made of the theileria species of Iran and of the transmitting ticks. On morphological grounds the theileria of Iran cattle were identified as *T. annulata* by Machattie. Infected *Hyalomma* nymphal and larval ticks were sent to Algeria and used to infect Algerian cattle; the disease was identical with Algerian theileriasis and further experiments indicated that the Algerian and Iranian species gave complete cross immunity.

Transmission of infection was found to be possible by four species of *Hyalomma*, namely *H. detritum*, *H. savignyi*, *H. rufipes glabrum* and *H. excavatum*.

Forty-eight cattle were pre-munized in France with a strain of *T. annulata* obtained from Algeria before being shipped to Iran. Four of these died of theileriasis after importation, the remaining 44 remained healthy.—M. C.

RAMPON. (1949.) Essai de traitement de la theilériose bovine Algérienne par le diméthane sulfonate de 4-4' diamidino-diphénoxypentane (Lomidine). [Treatment of bovine theileriasis.]—*Cah. Méd. vét.* 18. 19–21. 1612

R. described the treatment of six mild cases of *Theileria dispar* infection with varying doses of lomidine in which all the animals recovered. He found that the drug appeared to have an anti-pyretic effect rather than a specific action against the parasites. An injection of gonacrine (3,6-diaminomethyl acridinium chloride) should precede that of lomidine, because of the possible presence of *Babesia berbera* and *B. bigemina* as well as *T. dispar*.—M. L. CLARK.

BRUN, M. (1949.) La theilériose bovine Algérienne. Son traitement par la "Lomidine-Gonacrine". [Treatment of bovine theileriasis.]—*Cah. Méd. vét.* 18. 16–18. 1613

Cases of *T. dispar* infection were treated with 1 g. of lomidine in a 1:20 solution injected intravenously, repeated after 48 hours simultaneously with 2–2.5 g. gonacrine in a 1:40 solution, also repeated after 48 hours in 1:40–1:500 glucose solution. Symptomatic treatment was also given. Although gonacrine was well tolerated at the beginning of an attack, fatalities were likely to occur if used at about the fifth day; it was contra-indicated if a pulse, indicative of cardiac

complications, could be felt behind the left shoulder. Of 22 cattle treated at various stages of infection, 15 recovered and seven died.

—M. L. CLARK.

DSCHUNKOWSKY, E. (1948.) Sur les *Theileria* en général et sur *Th. annulata* en particulier. The genus *Theileria* and *Th. annulata* in particular.]—Arch. Inst. Pasteur Alger. 26. 374-385. 1614

There are two schools of thought regarding

See also absts. 1807 (trichomoniasis); 1833 (Report, S. Africa); 1840 (book, trichomoniasis).

members of the genus *Theileria*. One, upheld by Sergeant, Donatien *et al.*, holds that the species are true ones; the other school maintains that the only distinction is one of virulence, that the classification is provisional and only admitted for practical purposes. D., like du Toit and Meyer, support this latter view. He proposes the theory that in the tick host certain strains of *Theileria* become virulent while others become harmless.

—JAS. G. O'SULLIVAN.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

FRESDFORD, E. (1949.) Die Verbreitung der Maul- und Klauenseuche. [The spreading of F. & M. disease.]—Berl. Münch. tierärztl. Wschr. No. 8. pp. 29-30. 1615

In the author's opinion F. & M. disease is spread from animal to animal mainly by droplet infection.—W. M. HENDERSON.

CORONEL, A. B. (1947.) Types of foot-and-mouth disease viruses so far identified in the Philippines.—Philipp. J. anim. Indust. 9. 27-43. 1616

Four field strains of F. & M. disease virus were adapted to the g. pig and submitted to orthodox cross-immunity tests with the three standard types of virus. The results were clear-cut and showed that the strains were type Vallée "O" or type Vallée "A". With a further 89 field samples of tongue epithelium, adaptation to the g. pig was unsuccessful.—H. H. SKINNER.

SCHMIDT, S., HOLM, P., & STEENBERG, E. (1949.) Immunisation active contre la fièvre aphteuse. [Foot and mouth disease immunization.]—Rev. Immunol. Thérap. antimicrob. 13. 197-217. 1617

A number of g. pig vaccination experiments are described, the objects of which were to determine the effect on potency and stability of varying the content of aluminium hydroxide in the Danish foot-and-mouth disease vaccine, of using distilled water or 0.02 M phosphate buffer in preparation of the virus suspension, of using different batches of $\text{Al}(\text{OH})_3$ and of varying the pH of the virus suspension. Unfortunately the results obtained make it difficult to draw conclusions as, in many cases, where comparisons were sought, the dose of vaccine used was such that all groups were completely protected. The authors select the following points in their conclusions. Although the result of one experiment suggested that 50% $\text{Al}(\text{OH})_3$ gave a better vaccine, there did not seem to be much difference within the limits of 10-50%. The addition of formalin to a non-virulent adsorbate diminished its immunizing power. A second vaccinating dose of one-tenth the volume

of the first dose was sufficient to increase protection. No difference was found using phosphate buffer compared with distilled water in preparation of the virus suspension. Considerable variation was found in the g. pig experiments in the protective properties of vaccines prepared from different batches of $\text{Al}(\text{OH})_3$, this had not been noticed in the preparation of stock vaccines for cattle. pH 7.5 of the range 6.0 to 9.0 by 0.5 was the optimum pH for survival of virus at 26°C. Vaccines prepared using suspensions at pH 6.0 and 6.5 failed to protect whereas those using suspensions at pH 7.0, 7.5, 8.0, 8.5 and 9.0 gave good protection.—W. M. HENDERSON.

MOOSBRUGGER. (1948.) Einige theoretische Betrachtungen über die Konzentration von Maul- und Klauenseuchevirus in Aluminiumhydroxydvakzine. [Concentration of foot and mouth disease virus in aluminium hydroxide vaccine.]—Tierärztl. Umsch. 3. 127-130. 1618

M. considers that the principal disadvantage of the Waldmann type of aluminium hydroxide F. & M. disease vaccine is the relatively large dose. The methods of extracting the virus from the infective material and the possible losses of virus that might occur during subsequent manipulations are discussed. In view of the number of variable factors that have to be accepted during the preparation of each batch of vaccine, it is thought that no substantial improvement would result from reducing the size of the dose.—W. M. H.

MORA, A. (1947.) Sul nodo vaccinale antiastoso Waldmann. [The nodules caused by Waldmann immunization against foot and mouth disease.]—Nuova Vet. 23. 34-41. 1619

Using cattle, M. made a histological examination of the nodule that develops at the site of vaccination with an aluminium hydroxide vaccine. These nodules have all the characters of a typical granuloma.—W. M. HENDERSON.

MERCIER, G. (1949.) De la vaccination anti-aphteuse en milieu contaminé avec le vaccin Belin. [Vaccination with Belin's foot and

mouth disease vaccine in infected areas.]—*Bull. Acad. vét. Fr.* 22. 65–66. 1620

A dose of 50 ml. of the bivalent vaccine given subcutaneously was found by M. to give a very satisfactory immunity to cattle against contact infection in the field (France).—H. H. SKINNER.

BELIN, M., & BELIN, C. (1949.) Le vaccin antiaphteux Belin dans l'épizootie de la Sarre. [Belin's foot and mouth disease vaccine in an outbreak in the Saar.]—*Bull. Acad. vét., Fr.* 22. 357–359. 1621

The authors refer to two reports by the Director of Veterinary Services in the Saar on the use of the Belin F. & M. disease vaccine during 1949. 20,000 animals were vaccinated at a time when the disease was prevalent. It is claimed that thereby the spread of the disease was stopped.

—W. M. HENDERSON.

WEHMEYER, P. (1949.) Teneur en protéine dans le sérum des boeufs immunisés contre la fièvre aphteuse. [Protein content of serum of cattle immunized against foot and mouth disease.]—*Rev. Immunol. Thérap. antimicrob.* 13. 232–235. 1622

The serum globulin values of 123 cattle were obtained [the method used is not stated] before and three weeks after vaccination with aluminium hydroxide F. & M. disease vaccine. All vaccinated cattle had an increase in serum globulin of 0.31–0.45% following a 30 ml. dose of vaccine and from 0.58–0.76% after a 60 ml. dose of vaccine, although there was little correlation in the 30 ml. groups between cattle that had no, or only slight, reaction and those that had well developed lesions when their immunity was tested by tongue inoculation with virus.—W. M. HENDERSON.

ARAMBURU, H. G. (1949.) A comparison of different methods of inoculating guinea-pigs with the virus of foot-and-mouth disease.—*J. comp. Path.* 59. 42–47. 1623

Quantitative comparisons were made of five different methods of inoculating the plantar pads of g. pigs weighing 450–500 g. with the virus of F. & M. disease using filtrates of g. pig vesicle lymph. Titration of the same filtrate by multiple tracking and by multiple puncture gave 50% end-points of $10^{-5.5}$ and $10^{-3.8}$ respectively. In another experiment where five methods were compared the end-points were (1) multiple tracking both pads, $10^{-4.4}$; (2) two tracks on each pad, 10^{-4} ; (3) one track on each pad, $10^{-3.8}$; (4) multiple punctures both pads, $10^{-2.6}$; (5) five lines of scarification on each pad, $<10^{-2.2}$.

Intradermal tracking was always more sensitive in detection of minimal quantities of virus than either puncture or scarification. Multiple tracking gave consistently more positive results

than either two tracks or one track, but the difference between each was not great enough to be significant. Multiple tracking of both hind pads is, however, regarded as the most reliable method of pad inoculation of the g. pig for the detection of F. & M. disease virus.—W. M. HENDERSON.

TRAUB, E., & SCHNEIDER, B. (1948.) Infektion des bebrüteten Hühnereies mit dem Virus der Maul- und Klauenseuche. [Infection of fowl embryos with foot and mouth disease virus.]—*Dtsch. tierärztl. Wschr.* 55. 274–275. 1624

The authors report successful attempts at cultivating the virus of foot-and-mouth disease in the developing hen's egg. A filtered g. pig pad suspension of a mixture of ten strains of virus was used as starting material for alternate egg and g. pig passages. For the first passage, eggs incubated for ten days at 37.6°C. were used, but for later passages, nine-day incubated eggs. The technique of inoculation was by the chorioallantoic method and by the yolk sac method although the latter method was discontinued as the eggs done in this way were non-infective. After five alternate passages (three in eggs and two in g. pigs) direct egg to egg passage was employed and when this paper was written the 30th passage had been reached. An attempt to establish the virus by direct egg to egg passages from the beginning failed after the third passage. Forty-eight hours after inoculation the chorioallantoic membrane, the allantoic liquid and the embryo were found to be infective. Titres for g. pigs of 1:10,000 to 1:100,000 for the membrane and 1:100 to 1:100,000 for the embryo were obtained.

Complement-fixation tests showed that of the mixture of ten strains originally inoculated, only the stock Vallée O type strain had been established. This was confirmed by cross-immunity tests in g. pigs.

The pathogenicity of the strain for the g. pig appeared to decline on egg passage but one bovine animal reacted typically when inoculated with material collected after 15 direct egg to egg passages.

Embryo mortality was high. This was accounted for in part by non-specific causes, but a proportion of deaths appeared to be specific although no visible lesions either on the membrane or in the embryo were observed that might have been attributed to the action of the virus.

—W. M. HENDERSON.

MICHELSSEN, E. (1949.) Hemagglutination with foot and mouth disease virus using rat blood cells. Preliminary experiments.—*Nord. Vet.* 1. 905–914. [In English. Author's summary slightly amended.] 1625

Studies on the ability of foot-and-mouth

virus to cause agglutination of rat blood cells have given positive results when the tests were made with virus lymph (adapted guinea-pig virus) from 24-hour old primary vesicles. The agglutination was "specific" only at pH 6.0, and often it gives titer values varying between 1:80 and 1:320. As most sera have a certain agglutinative effect on rat blood cells (titer 1:20-1:40), it has been necessary to treat these sera by letting them stand for about 12 hours with rat corpuscles, equal parts. After this procedure, in all the cases examined the agglutinating effect of the serum has been eliminated completely.

Agglutinative experiments with virus + serum have sometimes given the following results: virus + homologous serum gives complete inhibition of the agglutination, whereas addition of heterologous serum inhibits only the highest agglutinating virus dilutions.

As to the serviceability of the method for serial examination of sera from practice nothing definite may be said. But some of the experiences gained using standard sera and standard viruses have been encouraging.

After treatment with rat blood cells several sera are found to be non-specifically inhibitory. No type differentiation has been obtained with such sera. Experiments concerning this inhibitory factor are now going on.

ARTYUKH, I. A., & NIKITIN, M. G. (1946.) [The distribution of Aujeszky's disease virus in swine and its stability in the carcass.]—*Veterinariya, Moscow*. 23. No. 12. pp. 33-35. 1626

In pigs that had died from Aujeszky's disease the virus concentrations increased in the skin, blood, organs, muscles and marrow after the carcasses were kept for 24 hours at 8°-10°C. The greatest concentrations were in the skin, brain and lungs. Freezing carcasses to -21°C. and then keeping at -10°C. for 20 days failed to kill the virus in the brain, lungs, liver and spleen. Salted pork appeared to be free from virus after 20 days.

—F. A. A.

JACOTOT, H., & NGUYEN-DINH-LAM. (1947.) Manifestations rabiques non suivies de mort chez des cobayes inoculés de rage après la vaccination. [Symptoms of rabies followed by recovery in g. pigs after vaccination.]—*Bull. Acad. vét. Fr.* 20. 430-432. 1627

During routine tests on g. pigs of the potency of rabies vaccine, cases have been observed in which g. pigs developed clinical symptoms of rabies and recovered. A number of such cases are described. Out of a total of 223 vaccinated g. pigs which were later tested by intramuscular injection of street virus 29 developed symptoms

and recovered, 124 developed symptoms and died and 70 had no symptoms.—M. C.

MITSCHERLICH, E. (1949.) Suha limfa protiv ovčijih boginja. [A dried vaccine for sheep pox.]—*Bilten Vet.* 2. No. 1. pp. 5-21. [German summary.] 1628

A vaccine suspended in a 3% boric acid solution was used in sheep pox immunization in Yugoslavia. This vaccine lost efficacy after four days at 37°C. M. maintained the virulence of a dry vaccine for a period of 21-60 days at 37°C. by keeping it in vacuum tubes with calcium chloride or in vacuum bottles.—E. G.

ROMERO, C. D. (1945.) Penicillin in purification of smallpox vaccine.—*Arch. Soc. biol. Montevideo*. 12. 152. [Abst. in *J. Amer. med. Ass.* 131. 1100. (1946), copied *verbatim*.] 1629

Diaz Romero vaccinated against smallpox a group of nonvaccinated persons in the course of penicillin therapy for syphilis. The therapy consisted in daily administration of 100,000 Oxford units for ten consecutive days. Vaccination took normally. Revaccination several months later did not take. Lymph in vitro was prepared by the addition of penicillin in quantities varying between 300 and 600 units for 1 gm. of lymph. Dilutions of both the penicillin and normal lymph in equal quantities gave equal results when used on the skin of rabbits and on the cornea of guineapigs. The same results were obtained two months later. Vaccination with both penicillin treated and normal lymphs took in non-vaccinated persons. The pustules of the two kinds of vaccine lymph were equal. Penicillin was added to vaccine lymph in vitro. It reduced the number of secondary bacteria. The number of secondary bacteria in the lymph had diminished still more by the end of two months. The author concludes that penicillin does not interfere with the effect of vaccine virus both in vivo and in vitro and that it reduces the number of secondary bacteria in vaccine lymph.

LANNI, F., ECKERT, E. A., & BEARD, J. W. (1949.) Influence of detergents on egg-white inhibition of hemagglutination by formalized swine influenza virus.—*Proc. Soc. exp. Biol., N.Y.* 70. 130-134. 1630

Soaps and synthetic ionic detergents greatly influence the character of inhibition titrations using purified, formalized swine influenza virus and egg-white inhibitor of vaccine haemagglutination. The mechanism of the detergent effect is being investigated.—W. R. BETT.

WAGNER, R. R., BENNETT, I. L., Jr., & LEQUIRE, V. S. (1949.) The production of fever by influenzal viruses. I. Factors influencing the febrile response to single injections of virus.—*J. exp. Med.* 90. 321-334. 1631

Three strains of egg adapted virus were used. All these viruses when injected intravenously into rabbits elicited a temperature rise commencing one half to three hours after injection.

After centrifuging at 10,000 revolutions per min. for 100 min. the supernatant fluid did not give any temperature rise whereas the sediment re-suspended in normal saline caused typical fever when injected into rabbits.

Allantoic fluid containing virus heated for 30 min. at 56°C. retained its pyrogenic properties though it lost its infectivity. Heating to 62°C. for 30 min. destroyed both the infectivity and haemagglutinating power and such heated material failed to produce fever in rabbits. The haemagglutinating power and fever producing activity of these viruses are closely associated. Their power to induce lymphopenia parallels their capacity to induce fever.—D. LUKE.

HAMMON, W. McD. (1948.) **The arthropod-borne virus encephalitides. The Charles Franklin Craig Lecture, 1947.**—*Amer. J. trop. Med.* 28. 515-525. 1632

The epidemiology, pathology, and clinical manifestations of the Western equine and St. Louis encephalitis viruses are remarkably similar. Double infections have been frequently seen. The possibility of finding a stem virus of the encephalitides is of real practical importance. It is suggested that from the ancestral stem, by transference to a mosquito vector or to another vertebrate host—mammalian rather than avian—one or another mutant assumes dominance.

—W. R. BETT.

SHUTARO, Y., & HIKOKICHI, T. (1949.) L'encéphalite japonaise des bovidés. [Japanese encephalitis in cattle.]—*Bull. Off. Internat. Epizoot.* 31. 525-527. 1633

What is considered to be the first recorded case of natural infection of cattle with Japanese encephalitis virus [presumably Japanese Type B encephalitis virus] is described. The animal contracted the infection in the summer of 1948 in a district in Japan at a time when cases of human and equine encephalitis were prevalent. It died eight days after the onset of symptoms and the virus was isolated from the brain. Specific neutralizing antibodies were not present in the blood. In three other suspected cases in cattle the outcome was not fatal and specific antibodies were demonstrated in the recovered animals.

—H. H. SKINNER.

RANDALL, R., MAURER, F. D., & SMADEL, J. E. (1949.) **Immunization of laboratory workers with purified Venezuelan equine encephalomyelitis vaccine.**—*J. Immunol.* 63. 313-318. [Authors' summary slightly modified.] 1634

The occurrence of infection with the Venezuelan equine encephalomyelitis virus in two members of the authors' laboratory staff and the reports of 24 other laboratory infections with the same virus indicated the exigency for the protective immunization of personnel having contact with this agent.

A formalized vaccine prepared from chick embryos infected with the Venezuelan virus and partially purified by differential high-speed centrifugation was used to immunize 20 laboratory workers who had not previously had contact with the agent. Following two injections of 1.0 ml. amounts of vaccine, the majority developed appreciable amounts of specific neutralizing antibody and one-half of them developed detectable amounts of specific complement-fixing antibodies. A third injection of vaccine resulted in increased amounts of both neutralizing and complement-fixing antibodies in the majority of the group. The neutralization indices now ranged from 150 to 1,585,000 and the complement-fixation titers from 0 to 1/32. While there was a general correlation between the results of neutralization and complement-fixation tests there was no close relation between the levels of antibody as determined by the two methods.

None of the 20 persons who received the present vaccine developed clinical signs of disease when they subsequently engaged in the large scale manufacture of Venezuelan equine encephalomyelitis vaccine.

AYRES, J. C., & FEEMSTER, R. F. (1949.) **The sequelae of Eastern equine encephalomyelitis.**—*New Engl. J. Med.* 240. 960-962. [Abst. in *Bull. Hyg., Lond.* 24. 735. (1949), copied *verbatim*.] 1635

The 1938 outbreak of eastern equine encephalomyelitis in southeastern Massachusetts is reviewed. Thirty-four persons were infected, 70 per cent. being under ten years of age; 9 survived, and 6 had permanent sequelae after one year. One of the 9 survivors cannot be located; 2 of the 8 other survivors had died; 4 are hemiplegic, mentally deficient and emotionally unstable; 1 is mentally deficient, epileptic and hysterically inclined; 1 has a "slight Friedreich's foot" and is a habit problem; only 1 has made an apparently complete recovery.

VIVOLI, D., & VIVOLI, M. D. (1948.) **Estudio anatomopatológico de dos casos de encefalomyelitis aguda a virus equino. [Pathological study of two cases of equine encephalomyelitis in man.]**—*Rev. Asoc. méd. argent.* 62. 484-488. [Abst. in *Bull. Hyg., Lond.* 24. 310-311. (1949), copied *verbatim*. Signed: F. O. MACCALLUM.] 1636

In 1933 ROSENBUCH isolated Western (U.S.A.) equine encephalomyelitis virus from horses with encephalomyelitis in the Argentine. The disease has appeared in epidemic form on numerous occasions since 1919–20 with mortality rates sometimes as high as 30 to 40 per cent. The Argentine strain of virus seems less virulent than the Californian.

The authors have described in detail the pathological findings of two fatal cases of encephalomyelitis in man in Argentina. These are said to be the first two fatal human cases of equine encephalomyelitis described in the Argentine, but the diagnosis is based entirely on the histopathological evidence. No epidemiological or laboratory data are provided to support the diagnosis.

PRICHARD, L. E. (1948.) **An outbreak of bronchitis (infectious respiratory catarrh) in horses.**—*Vet. Rec.* 60. 217–218. 1637

At the beginning of 1947, outbreaks of infectious bronchitis occurred in many horse stables of the railway service in England, those in the Lancashire area having incidence rates of between 25 and 100% (average 60%).

Purpura was a not infrequent sequel and it is recorded that an intravenous injection of 125 ml. of a 33·8% solution of the sodium salt of sulphamethazine saved 17 out of 22 cases, whilst 12 out of 19 not so treated died. A Group C streptococcus was associated with some of these cases.—J. E.

ALEXANDER, R. A. (1948.) **The 1944 epizootic of horsesickness in the Middle East.—Onderstepoort J. vet. Sci.** 23. 77–92. 1638

The history of outbreaks of horse sickness in Egypt, Syria and Palestine prior to 1943 is reviewed and a detailed account is given of the serious epizootics of 1943 and 1944. A feature of the outbreaks was the rapidity with which infection spread northwards from the Sudan-Egyptian border along the Nile to reach Cairo within a period of three months. The correctness of the diagnosis was fully established by study of material sent to the Onderstepoort Laboratory.

The mode of introduction of infection into Palestine is not known, but at the time there was considerable traffic by air between Egypt and Palestine and it is possible that infected *Culicoides* were transported in aircraft.

The methods used to control the outbreaks comprised embargo on import of equine species, goats and dogs from the Sudan, veterinary inspection of animals on transport lines and destruction of infected animals with payment of compensation to the owners. In Palestine the confinement of all horses, mules and asses to their stables from

sunset to sunrise was made compulsory and owners were advised to keep smoke fires alight in the stables.

Vaccine was not available in Egypt and was obtained from Kabete and Onderstepoort by air.

In Egypt of a total of 13,942 horses and mules vaccinated 209 subsequently died. In Palestine 29,558 animals belonging to civilians were immunized and 530 subsequently died, of these 86% occurred within 14 days after vaccination and 95% within 18 days.—M. C.

MARRONE, P. (1948.) **La febbre catarrale maligna e la terapia sulfamidica. [Bovine malignant catarrh and sulphonamide therapy.]—Zooprofiliassi.** 3. No. 8. pp. 18–24. 1639

After a rather lengthy general discussion on bovine malignant catarrh, M. described one instance of successful sulphonamide therapy in a cow infected with typical malignant catarrh. Clinical symptoms were given in detail. The course of treatment lasted six days. The first day the cow was given two intravenous injections of 100 ml. each of "streptosil thiazole" [sulphathiazole?]. Subsequent injections of 100 ml. were given once per day. This treatment was supplemented by 4 g. of the drug given *per os* every three hours. The cow recovered within three weeks. M. pointed out that conclusions cannot be made from one case and further work is necessary.—E. G.

ROTTGARDT, A. A., ARAMBURU, H. G., & PIRAZZI, A. J. G. (1949.) **Complement fixation test in contagious ecthyma. [Correspondence.]—Nature, Lond.** 163. 219–220. 1640

The antigen was a saline extract of desiccated crusts from experimentally infected sheep. Sera were obtained 8 and 31 days after infection, centrifuged for 15 min. at 3,000 revolutions per min. and inactivated at 56°C. for 45 min. Controls included the three types of foot and mouth disease sera, normal g. pig serum and normal ovine and human serum. Only 18 known positive sera were tested—all gave positive results.

—L. M. MARKSON.

POPOVIĆ, B. P. (1948.) **[Dogs in the epidemiology of swine fever.]—Jugoslav. vet. Glasn.** 2. 25–31. [In Serbian; abst. from French summary.] 1641

P. investigated the role of dogs in the epidemiology of swine fever. Three dogs were given subcutaneous injections of virus suspensions and of infected blood and three were fed organs of infected pigs and all six remained healthy. Their blood and urine was not pathogenic for pigs. Dogs may, however, act as mechanical carriers of the virus.—E. G.

MENZANI, C. (1948.) **L'encefalomielite enzootica**

dei suini (morbo di Teschen). [**Porcine encephalomyelitis (Teschen disease).**].—*Zooprofilassi*. 3. No. 9. pp. 1-10. 1642

M. reviews and discusses the aetiology, epidemiology, lesions and differential diagnosis of Teschen disease. There are 14 photographs of pigs affected with Teschen disease and 13 photomicrographs (two in colour) of lesions in the tissue of the spinal marrow and the brain. There is also a very useful list of references.—E. G.

HOFFMANN, F. (1949.) **Studies on distemper.**—*Acta vet. hung.* 1. 89-92. [In English.] 1643

1,651 susceptible dogs were parenterally inoculated with 5 ml. of highly virulent defibrinated blood, and the first symptom was a sudden rise in temperature after an incubation period of 2-6 days. This febrile condition lasted as a rule for only one day, and in some animals was followed by complete recovery with no signs of the disease, although in most the well-known clinical picture developed. Experiments with 4,000 dogs of various ages revealed that the percentage susceptible to parenterally inoculated virus decreased with age from 74% at 4-6 months to 3-4% at 6-10 years showing that older dogs become immune through previous natural infections.

Young puppies from immune bitches resisted artificial infection from 4-6 weeks of age, had a degree of resistance at 7 weeks, but the rate of susceptibility increased at 8 weeks, and the only puppy at 9 weeks tested died of distemper. Further tests showed that the immunity acquired at this early age is only of short duration, for those resisting at 5 weeks were tested again at 4 months when half of them had a sudden rise of temperature.

Simultaneous subcutaneous injections of 20 ml. of serum of hyperimmunized dogs and 2 ml. of defibrinated blood of high virulence immunized dogs without danger, even when susceptible animals which had received virulent blood only were kept in the same cage. To demonstrate that an active immunity developed, even though they did not react, the animals were inoculated 3-4 weeks later with highly virulent blood, but resisted the infection.—J. O. L. KING.

GORET, P. (1949.) **Le virus de Carré. Les variations de la virulence et leurs relations avec la symptomatologie et la prophylaxie de la maladie.** [Variations in virulence of the distemper virus.].—*Rev. Path. comp.* 49. 396-399. 1644

Discussing distemper and conditions such as fox encephalitis, Rubarth's disease and hard pad disease which are readily confused with it, G. states that attenuation of distemper virus for the dog by passage through ferrets is not regularly

produced in France nor in Europe generally. He considers that spontaneous variations of virulence occur and are related to the clinical symptoms, but all such strains are immunologically identical.

—M. C.

WEST, J. L., & BRANDLY, C. A. (1949.) **The production of immunity to distemper in foxes by means of vaccines.**—*Cornell Vet.* 39. 292-301. [Authors' summary copied *verbatim*.] 1645

A chemically inactivated 20 percent homologous fox distemper tissue vaccine, administered intramuscularly or subcutaneously, either at the time of shipment of young foxes to the furring ranges or 3 to 14 days previously, conferred a significant protection against losses from distemper. Evaluation of the vaccines and the time factor was made by comparing the losses among serum-treated control foxes of identical age and exposure under furring range conditions. Under the conditions of this study there appeared to be no advantage in vaccinating foxes 3 to 14 days prior to shipment over vaccinating them at the time of shipment.

Vaccination of approximately one-half of the furring range population, in addition to conferring significant protection to the treated groups, appeared to have prevented the virus from reaching maximal virulence, thereby secondarily benefitting the control group that had received a single treatment in anti-canine-distemper serum.

The incorporation of certain adjuvants, alumina gel H-81, killed *Mycobacterium butyricum*, and (or) an oily absorptive base, into the 20 percent tissue suspensions generally produced a vaccine of superior immunizing capacity.

Pelting operations, occurring at the peak of distemper infections on several ranges, probably reduced the maximal mortality among serum treated groups.

The observed improvement in the quality of the pelts in 1947 over previous seasons may have been the direct result of vaccination. Indirectly the improvement may have been an effect of decreasing the intercurrent secondary bacterial infections that are commonly associated with distemper.

ŠKARKA, M., & NESVADBA, J. (1949.) **Niekol'ko skúseností s preventívnym a terapeutickým použitím adsorbatovej vakcíny proti moru hydiny.** [Preventive and therapeutic use of adsorbate vaccine against fowl plague.].—*Čas. československ. Vet.* 4. 362-368. 1646

Vaccination of poultry against fowl plague was carried out in a Slovak village where there had been outbreaks on several farms. Most satisfactory results are claimed to have been

achieved with an adsorbate vaccine at 2 ml. per kg. body weight. Simultaneously, a therapeutic dose of a sulphonamide [type not stated], was given *per os*.—E. G.

HITCHNER, S. B. (1949.) **The pathology of infectious sinusitis of turkeys.**—*Poult. Sci.* 28. 106–118. 1647

Turkey rearers consider infectious sinusitis to be the most important infectious disease of turkeys in Virginia, and it has been recorded in many parts of the U.S.A. and in England and Australia under such names as swollen head, epizootic pneumo-enteritis and turkey roup. The disease is characterized by shaking of the head, nasal discharge and distension of one or both infra-orbital sinuses by an almost colourless exudate, which may become caseated. It appears to be specific for the turkey, but fowls may act as carriers. Poults may show evidence of infection when three weeks old, and may be infected at any age afterwards, but it is most prevalent and severe at from 3–5 months. Mortality percentages from 10–100 have been recorded. The best treatment is to aspirate the exudate with a syringe and needle and then inject 4% silver nitrate, which will give 80–90% recoveries.

The disease was transmitted by a bacteria-free egg-propagated agent passed through 28 generations in 11-day-old embryonating hen's eggs. The embryo had no significant gross lesions, and there was no mortality until the 19th day of incubation. Direct inoculations of broth suspensions of infected egg membranes into the infraorbital sinuses of susceptible turkeys produced the classical symptoms in 2–12 days. There was also enlargement of the Harder's gland. The infectious agent would not pass through a Seitz or Berkefeld filter. The P.M. findings were thickening of, and petechial haemorrhages into, the sinus membranes, areas of consolidation in the caudal extremities and lateral borders of the lungs, and thickening and deposition of caseous material in the air sacs. Smears of sinus exudate and yolk sac material stained with Giemsa stain revealed minute bodies, and the possibility of the causal agent being a rickettsial organism is discussed.

—J. O. L. KING.

UTZ, J. P. (1949.) **Studies on the inactivation of influenza and Newcastle disease viruses by a specific lipid fraction of normal animal sera.**—*J. Immunol.* 63. 273–279. [Author's summary and conclusions copied *verbatim*.] 1648

A lecithin-like fraction of sera from seven different animal sources appears capable of inactivating *in vitro* four different strains of influenza virus and one strain of Newcastle disease virus. This material is effective in concentrations

so low as to exclude any possible participation of the extracting materials; the inactivating effect appears to be peculiar to serum lipids. The inactivation of the infective property of these viruses occurs at 37°C but not at a room temperature of 24°C; it is proportionate to the time of exposure; it is not hastened by increasing the amount of material present; and it is not significantly affected by changes in the pH in the range of 5 to 9.

The inactivating material does not affect the hemagglutinating property of active or heat-inactivated influenza virus. The inactivating effect is inhibited by solutions of alpha amino acids and imino acids with the exception of the dicarboxylic acids, glutamic and aspartic acids.

The evidence for and against the positive identification of this material as lecithin is discussed.

LUGINBUHL, R. E., & JUNGHER, E. (1949.) **A plate hemagglutination-inhibition test for Newcastle disease antibodies in avian and human sera.**—*Poult. Sci.* 28. 622–624. 1649

The authors mixed 0.1 ml. of unknown serum with 0.05 ml. of known Newcastle disease virus on a ruled plate mirror, added 0.1 ml. of a 1.5% suspension of washed red cells and mixed the whole. Known negative and positive controls were carried out at the same time. The result could be read within 3–5 min. Complete inhibition of haemagglutination was considered positive, fine granular agglutination suspicious and coarse agglutination negative. This plate test gave comparable results with the tube dilution test in 98% of cases. It was estimated that 60–72 serum samples can be examined in one hour.—D. LUKE.

MARKHAM, F. S., COX, H. R., & BOTTORFF, C. A. (1949.) **Field trials with living virus vaccine for Newcastle disease.**—*Poult. Sci.* 28. 52–57. 1650

The vaccine used was prepared from the 12th duck-embryo passage of the MK-107 strain, and all field vaccinations were performed by wing-web puncture. In the first trials deaths from all causes in 37,040 vaccinated and non-vaccinated birds amounted to 1.363%, proving that it was well tolerated by healthy 4-week-old chicks. Most of the deaths occurred in chicks affected by coccidiosis.

In the second trial a mash containing 0.25% sulphamethazine was fed on the third day before vaccination and on the first and fifth days following and coccidiosis was effectively controlled. About 48 hours before vaccination, an outbreak of Newcastle disease commenced in one group, and out of 2,000 vaccinated birds, there were 6.10% of deaths, and from the same number of controls

9.5%. In another group of 3,500 vaccinated birds the deaths totalled 1.88%.

When performed not later than 6-8 weeks before coming into production and not earlier than 4 weeks of age vaccination would appear to offer the best returns. It would avoid the disturbances of production associated with infections during the laying period, and would, through passive transfer of antibody in the yolk fluid, assure chicks of protection during their first weeks of life.—J. O. L. KING.

CLANCY, C. F., COX, H. R., & BOTTORFF, C. A. (1949.) **Laboratory experiments with living Newcastle disease vaccine.**—*Poult. Sci.* 28. 58-62. 1951

After six consecutive passages in chick embryos strain MK-107 virus was serially passaged in duck embryos, and the 11th passage was used in the preparation of the vaccine. The vaccine was administered by wing-web puncture. In three experiments using chicks of various ages it was found that 50% of the one-week-old and 30% of the two-week-old chicks died after vaccination, but that 89% of the survivors withstood a challenge dose which killed all but one of the 25 non-vaccinated controls of the same age. Among the three and four-week-old birds, there was only one death out of 120 birds after vaccination, and all but five remained healthy when challenged with high doses of virus. Between the 5th and 10th days after vaccination, there was slight depression in some birds, but they fed and grew normally.

Further tests proved that vaccination did not result in a carrier state either in vaccinated birds, or in those which acquired infection by contact with vaccinated birds. One hundred and ten days after vaccination ten birds were challenged with doses of virus, and one died. Of six controls two died and only one remained symptom free.

Chicks hatched from eggs laid by birds vaccinated approximately one year previously received a considerable measure of immunity during their first three or four weeks of life.

—J. O. L. KING.

FLORMAN, A. L. (1948.) **Some alterations in chicken erythrocytes which follow treatment with influenza and Newcastle disease virus.**—*J. Bact.* 55. 183-196. 1952

The nature of the changes produced by haemagglutinating virus in erythrocytes of chick embryos is unknown. Their extent is directly proportional to the intensity of virus treatment. Cells treated with PR8 virus cannot subsequently absorb, or be agglutinated by, Newcastle disease virus; cells treated with NDV subsequently absorb and are agglutinated by PR8 to the same extent as are controls. In chick embryos infected

with PR8 or NDV and later with the heterologous virus there was no selective blocking of the second virus.—W. R. BETT.

WOLINS, W. (1948.) **Ornithosis (Psittacosis), a Review. With a report of eight cases resulting from contact with the domestic Pekin duck.**—*Amer. J. med. Sci.* 216. 551-564. [Abst. in *Bull. Hyg., Lond.* 24. 328. (1949), copied *verbatim*. Signed: S. P. BEDSON.] 1953

After a short but good review of the subject of psittacosis the author describes 8 cases contracted from domestic ducks. Seven of the patients were employed on duck farms on Long Island; the eighth developed pneumonia a short time after visiting a duck farm, recovered partially, but relapsed some six weeks later. This, last patient was the only one severely ill; six were moderately ill and one had a short febrile illness without pulmonary involvement. Diagnosis was on clinical grounds, a history of exposure to ducks (which was intimate in seven) and a positive complement fixation test. In two only was a rising titre demonstrated. Six of the patients were treated with penicillin—400,000 units daily—resulting in prompt recovery in four. The reason for the lack of response in the two cases was not apparent. Psittacosis virus of the ornithotic type was recovered from the ducks (number of birds examined not stated).

KILBOURNE, E. D., & HORSFALL, F. L., Jr. (1949.) **A chemical method for the detection of virus infection of the chick embryo.**—*Proc. Soc. exp. Biol., N.Y.* 71. 708-718. 1954

The method depends on the increased concentration of protein in infected allantoic fluid, the turbidity produced on the addition of 1 ml. of 10% trichloroacetic acid to 1 ml. of allantoic fluid being read after 2-5 min. Details are given. In normal embryos from 10-12 days old, turbidity values varied from 8-75, representing protein concentrations of 2.4-23 mg. % (average value 8.7 mg. %), while those of infected allantoic fluid ranged from 118-540 (35.4-162 mg. %). A linear relationship was demonstrated between the turbidity values and the protein concentration of the fluids.

It appears likely that the increased protein is attributable to host reaction; the virus itself contributes little if anything to the turbidity, as indicated by centrifugation experiments. The increased protein did not differ immunologically from the protein normally present when the antigenic properties were examined. The Lee and PR8 strains of influenza virus, Semliki Forest virus, Newcastle disease virus and mumps virus consistently caused an increase in protein during the course of infection, the more toxic viruses causing significantly greater turbidities.

Samples of allantoic fluid contaminated by bacterial infections or by blood while being harvested, or those from embryos incubated for more than 12 days, are unsatisfactory for use with this method. Neutralization of Lee virus by specific immune serum prevented the increase in allantoic fluid protein, thus indicating a method of identifying the infecting virus, and that the protein rise depends on the virus multiplication. This simple method may be of value in the detection and identification of any virus capable of multiplying in the cells of the allantoic sac of the chick embryo.—H. G. CLARK.

BAUER, D. J. (1949.) **Multiplication of the animal viruses.**—*Nature, Lond.* 164. 767–771. 1655

The author speculates on the mechanism of virus multiplication having considered that there is little definite evidence that true viruses have any enzyme activity capable of giving them a metabolism distinct from that of the host such as that possessed by pathogenic bacteria. With a paper of this kind it is difficult to abstract conclusions by removing them from the relevant discussion but the principal points made by B. are presented below.

Investigation of the biochemical activities of animal viruses is made difficult as pure preparations cannot be easily obtained and these viruses are usually extracted from tissues themselves rich in enzymes. The enzyme activity reported to be present in suspensions of vaccinia virus, therefore, may be a result of contamination with tissue or bacterial enzymes or of decomposition of the substrate. There is conflicting evidence on the mucinase activity of influenza virus and if there is here a true enzyme action it may act only as a means of attaching virus to cells without playing any part in virus metabolism.

There is some evidence suggested by electron microscopy of psittacosis virus in the chorio-allantoic membrane that could be interpreted as showing that virus bodies have an affinity in the host cell for the chromidia and interchromidia, the enzyme-containing structures of the cytoplasm. A considerable increase of xanthine oxidase activity occurs in mouse brain infected with the viruses of neurotropic yellow fever, lymphocytic choriomeningitis and lymphogranuloma inguinale and in chick embryos infected with yellow fever virus. These facts are used in support of the view that if it is improbable that viruses have enzymic activity then the virus must exert some control over the enzymes of the host to enable the synthesis of new virus material to take place.

Studies of the development of psittacosis virus in the chorioallantoic membrane and in tissue culture, of lymphogranuloma virus in mouse

brain and in the yolk sac, and of vaccinia and electromia viruses in the chorioallantoic membrane all reveal a preliminary non-infective phase and suggest that there may be a progressive systematic conversion of cytoplasmic components into virus material rather than virus multiplication by a process of binary or plural fission. Such a change might be brought about by dissolution of the virus into a soluble phase which then diffuses through a considerable volume of cytoplasm and organizes it into virus material by an action upon the chromidia and their enzymes. Soluble antigens have already been associated with the viruses of influenza, vaccinia and mumps although, as yet, there is no evidence that these soluble antigens represent an intracellular developmental phase. Further evidence suggesting that virus may be formed by conversion of normal cell constituents is that purified influenza virus from allantoic fluid contains an antigen present in uninfected allantoic fluid. Similarly virus purified from mouse lungs contains an antigen present in normal mouse lung and equine encephalomyelitis virus purified from infected chick embryos contains up to 70% of an antigen present in normal embryo tissues.

The growth-cycle of influenza virus and the maximum infectivity titres of a number of other viruses are discussed in connexion with the possible distribution of virus amongst susceptible cells and further evidence is sought thereby for the existence of a non-infective phase.

B. concludes that there is more reason to believe that viruses resemble genes or chemical organizers rather than degenerated bacteria. He suggests that antiviral chemotherapy should be reviewed in the light of the concept that the metabolism of the virus is actually that of the host so that no selective interference may be possible.—W. M. HENDERSON.

RHODES, A. J., & CHAPMAN, M. (1949.) **Some observations on interference between neurotropic viruses.**—*Canad. J. Res. Sect. E.* 27. 341–348. [Authors' abstr. slightly modified.] 1656

Studies have been carried out on the interference phenomenon with certain neurotropic viruses in experimental animals. The primary object was to investigate claims that material containing human poliomyelitis virus interferes with the progress of the infection by the MM virus in hamsters, or the Lansing virus in mice. The authors have failed to find evidence that the inoculation of specimens known to contain human poliomyelitis virus interferes with the progress of MM or Lansing virus infections, and they do not believe that the interference phenomenon can be used in this way as a diagnostic test. In the course of this investigation, it was found that interference

occurs when hamsters are inoculated cerebrally with lymphocytic choriomeningitis virus, and, four to seven days later, with the antigenically unrelated MM virus by the peritoneal route. A significant number of such treated animals are spared from developing paralysis due to the MM virus. Evidence was also obtained that under certain circumstances the inoculation of MM virus may lessen the severity of the illness due to lymphocytic choriomeningitis virus injected several days earlier.

MANDERSON, W. G. (1949.) **Q fever. Report of a case.**—*Lancet*. 252. 1085–1086. 1657

A brief note on a case of atypical pneumonia in England, considered to be Q fever.

HENI, E., & GERMER, W. D. (1948.) **Q(ueensland)-Fieber in Deutschland. [Q(ueensland) fever in Germany.]**—*Dtsch. med. Wschr.* 73. 472–476. 1658

The authors describe an epidemic of Q fever in man in the Tübingen district of South-West Germany during the winter of 1947–48. The symptoms are described in detail and the literature is reviewed.

In the village of Remmingsheim with a predominantly agricultural population of 702, the epidemic started in November, 1947, and 326 inhabitants fell ill. Among the persons who remained healthy were the families of four industrial labourers. The peak was reached in December with 260 cases. At the end of February the epidemic ceased. Twenty-one convalescents yielded 19 positive complement-fixation tests at titres of 1:32–1:1,024. G. pigs infected with blood of patients in the early stages of the disease had titres of 1:32 and higher. Sera of 10 convalescents were tested four months after recovery and had titres of 1:8 and higher.

In the village of Dettenhausen, a mixed agricultural and industrial settlement of 1,400 inhabitants, about 300 fell ill. 90% had titres of 1:32 and higher. The first 20 persons to fall ill

were labourers who did not possess either cattle or goats.

At Dettingen, a village with 4,000 inhabitants, mostly smallholders employed in factories, about 1,400 became infected. The disease was not confined to persons keeping either cattle or goats. Of 12 tested, 11 had positive titres of 1:32 and higher.

At Baising 50 out of 700 became ill. The first case was of a man employed at the milk collection centre. Three out of four had positive tests.

It was proved that inhabitants of Dettinghausen had purchased food at Remmingsheim during October and November. No contact, however, was established between the other villages. In several surrounding villages single cases were observed. Altogether there were seven fatal cases in persons aged 74–86.

Some of the patients had had contact with cattle and the authors state that it is not impossible that they had been infected with dry tick excrements, although there are hardly any ticks in the district, particularly in winter when the epidemic occurred. Many patients had had no contact with cattle or straw. Whether milk was the cause of infection has so far not been established. A proportion of the patients denied having consumed raw milk. It is suggested that the disease was imported with cattle from the Balkans and Italy during the war and that the epidemic reached such high figures owing to the hot summer followed by the very mild winter of 1947–48. In the opinion of the authors the disease was transmitted directly from patient to patient through the respiratory system. Concurrently there was in the same area a virus infection with similar symptoms.

Transmission experiments with g. pigs were carried out. Blood of newly infected patients was injected intraperitoneally and the g. pigs developed body temperatures of 39°C. after 6–10 days. On one occasion nasal discharge from a patient was rubbed into the nasal mucosa of a g. pig which subsequently developed a temperature of 39.6°C.

—E. G.

See also absts. 1568 (serum therapy against swine erysipelas using mixed swine fever and swine erysipelas serum); 1833 (Report, S. Africa); 1841 (book, diagnosis of virus and rickettsial infections); 1842 (book, livestock diseases); 1843 (book, animal diseases in S. Africa); 1844 (book, pig diseases).

IMMUNITY

OAKLEY, C. L., WARRACK, G. H., & BATTY, I. (1949.) **Sites of antibody production.**—*J. Path. Bact.* 61. 179–194. [Authors' summary slightly modified.] 1659

After secondary stimulation of horses, rabbits and guinea-pigs by the subcutaneous injection of diphtheria or tetanus alum-precipitated toxoid [A.P.T.], antitoxin is produced in the lymph glands draining the injected area. In some cases

antibody may be produced in the injected skin, especially if the area so injected has already been primarily or secondarily stimulated with the same A.P.T., with production of a local granuloma.

No evidence has been obtained of antibody production elsewhere, though the possibility cannot be excluded; if it occurs, as much as 90 per cent. of the total antibody might be produced outside the injection area and its draining

lymphatic glands without these methods being able to demonstrate it.

Differential local production of antitoxin may occur up to 271 days after the injection of diphtheria or tetanus alum-precipitated toxoid.

LEMÉTAYER, E., NICOL, L., GIRARD, O., CORVAZIER, R., & CHEYROUX, M. (1949.) Nouvelles recherches sur le passage des antitoxines à travers le placenta chez la jument. [**Trans-placental passage of antitoxins in the mare.**]—*Bull. Acad. vét. Fr.* 22. 367–372. 1660

The authors critically discuss the earlier experimental observations as a result of which it was considered that the passive transfer of immunity from the mare to the foal was solely by the colostrum. While that route may be the most important, the authors extend their earlier observations to show that transplacental transfer of antibodies may nevertheless occur.

In one group of 17 mares immunized against tetanus, antibodies were found in the blood of eight foals before suckling. In a second group of 20 animals immunized either against diphtheria or tetanus, the foals of all of them had antibodies in the same circumstances. The results are set out in three tables.—G. FULTON ROBERTS.

LAFFOLAY, M. B. (1949.) A propos de l'ictère du mulet: rôle de la folliculine. [**Haemolytic jaundice in mule foals and the rôle of folliculin.**]—*Bull. Acad. vét. Fr.* 22. 421–424. 1661

In studying nine cases of icterus in mule foals L. confirmed earlier observations that the antibody titre is higher in the colostrum than in the blood, but that it falls after three days. It was also observed that only a small quantity of colostrum containing antibody need be ingested for jaundice to result, and that even if the dam's milk is withheld for the first 36 hours after birth, this period may not be long enough for the antibody to fall below the critical level at which it will cause symptoms.

One foal experienced a transient and unexplained complication manifested by the symptoms of meningism.

L. speculates on the impermeability of the placenta to the antigens and antibodies concerned and suggests that the antibodies may, in fact, be formed against the placenta itself. To explain the premature mammary changes it is postulated that there may be a premature decrease in folliculin.

—G. FULTON ROBERTS.

YOUNG, L. E., ERVIN, D. M., & YUILE, C. L. (1949.) **Hemolytic reactions produced in dogs by transfusion of incompatible dog blood and plasma. I. Serologic and hematologic aspects.**—*Blood*. 4. 1218–1231. 1662

YUILE, C. L., VAN ZANDT, T. F., ERVIN, D. M., & YOUNG, L. E. (1949.) **Hemolytic reactions produced in dogs by transfusion of incompatible dog blood and plasma. II. Renal aspects following whole blood transfusions.**—*Ibid.* 1232–1239. 1663

I. The authors discuss previous experiments on individual differences in the blood of dogs and describe the methods employed in the present investigation. There are at least four antigenic factors in dogs' red cells, but only one of these was used in this study. The transfusion of "Do-positive" blood into a "Do-negative" dog is followed by the appearance of a specific antibody in the recipient about 8–11 days later. Some dogs, however, require repeated stimuli before antibodies are formed. The antibodies will agglutinate the specific cells, or will haemolyse them rapidly in the presence of complement. Sometimes the antibodies act as "incomplete" agglutinins. Clinically the transfusion reactions are characterized by restlessness, salivation, vomiting, incontinence and fever.

In observations on the recipient after incompatible transfusion of whole blood (using both Ashby techniques, and the tagging of cells with radio-active iron) it was found that 84% of the donor's cells were eliminated after 10 min., and all of them by 30 min. The haemoglobinaemia rose to its maximum 10 min. after transfusion, but the bilirubinaemia reached its maximum 3–6 hours after transfusion and returned to normal within 24 hours. These latter maxima were higher when the recipient's anti-Do antibody titre was high (e.g. 1:256) than when it was low (e.g. 1:2).

Other consequences observed in the recipient were: an abrupt fall of complement so that its activity remained undetectable for five hours; a transient leucopenia, a shift to the left, a shower of nucleated red cells, and some erythrophagocytosis. On some occasions a transient thrombocytopenia and prothrombinaemia were noted. Electrophoretic studies revealed no significant change except a peak thought to be due to oxyhaemoglobin.

In a further set of observations after transfusion of plasma containing anti-Do antibody (titre 1:256) into a Do-negative dog it was found that the destruction of the recipient's cells was more prolonged. Maximal haemoglobinaemia was reached after five hours and haemoglobin was still detected after 72 hours. The haematocrit reading fell until the ninth day and the reticulocyte response was maximal on the 13th day after transfusion. Spherocytosis and increased fragility were evident for 20 days. The recipient's complement titre did not decrease significantly and

the donated antibodies were not detected at any time in the recipient's serum.

II. Haemolytic reactions were studied in eight experiments in which the dogs' urine was alkaline and five experiments in which it was acid. The maximum haemoglobinaemia was related to the quantity of transfused blood and the recipient's antibody titre. Haemoglobinuria commenced within 10 min. and persisted for 8-24 hours. The excretion rate paralleled the plasma concentration and was related to body weight, but was unrelated to the pH of the urine; the dogs with initially acid urine experienced a transient spontaneous alkalization. The excreted haemoglobin ranged from 10-40% of the transfused blood. There were no significant observed differences in the reactions of the two groups of dogs. It was thought that haemoglobinaemia alone was unable to cause haemoglobinuric nephrosis.—G. F. R.

KLINE, B. S. (1949.) **The pathogenesis of Erythroblastosis foetalis.**—*Blood*. 4. 1249-1255. 1664

Both in cases of erythroblastosis foetalis and in normal pregnancies in human beings, constant changes were observed microscopically in the placenta which might account for the transfer of incompatible cells and antibody between the mother and foetus. The features observed were occlusion of peripheral villous blood vessels by red cells and fibrin with associated necrosis and rupture of the walls and haemorrhage of foetal blood into the intervillous spaces. Photomicrographs illustrate the changes.—G. F. ROBERTS.

NACHTSHEIM, H., & KLEIN, H. (1948.) **Hydrops congenitus universalis beim Kaninchen, eine erbliche fetale Erythroblastose. [Hydrops congenitus universalis in rabbits, a hereditary foetal erythroblastosis.]** pp. 71. Berlin: Akademie-Verlag. DM. 7.50. 1665

This paper gives a detailed account of finding, in a group of rabbits, as a result of inbreeding experiments, new-born young with generalized oedema and erythroblastosis, also in some cases erythroblastosis without oedema. Both conditions were always fatal. The authors describe the inheritance of the condition and give a detailed account of the naked-eye appearance of the affected young and of the histology of each tissue.

The factors underlying the inheritance are stated to be not yet fully elucidated. All the affected young derived from one albino buck

which was inbred with its daughters and grand-daughters. Hydrops in the young was found from the second generation of inbreeding. Affected young were in the same litter as normal young and made up about 3-23% of the total progeny of a doe. It was first considered likely that a recessive "hydrops" gene was responsible, but the numbers of affected young were very much fewer than would have been expected if this had been the only factor controlling the inheritance. The doe and its genotype seemed to be of greater importance than the genotype of the buck and an additional conditional factor is suggested.

Rabbits with hydrops and erythroblastosis, or with erythroblastosis without hydrops, were almost always born alive, but always died at, or within a few hours of, birth. They were all albino. The oedema was generalized and affected all tissues capable of oedema. There was marked erythroblastosis, shown principally by extramedullary haemopoiesis, much of which took place in the liver. The spleen was almost always enlarged and showed much erythropoiesis. Nucleated cells of the erythroid series were the predominant features of the peripheral blood picture. Stored iron could be demonstrated regularly and was considered to point to increased blood destruction. Jaundice was not seen.

A very close parallel is drawn between the findings in the hydropic rabbits and those in haemolytic disease of the new-born in human beings caused by iso-immunization of pregnancy by red cell antigens of the Rh series. It is suggested that this hydrops in rabbits has a similar aetiology, and that a gene responsible for abnormal permeability of the placenta is a conditional factor which must be present before foetal red cell antigens can reach the blood stream of the doe.

A report of preliminary serological investigations by Dahr & Knüppel is appended. Tests on rabbit stock using Rh agglutinins were negative. G. pig anti-rabbit red cell antisera were prepared, using the blood of the buck with the highest percentage of hydropic young. When the resulting antiserum was absorbed with red cells from a doe bearing hydropic young, a grouping serum was obtained which agglutinated the red cells of all the bucks of the hydropic stock. The red cells of most of the does bearing hydropic young were negative. A few were positive, but this is explained by suggesting for the rabbit a series of multiple allelic genes governing their red cell antigens.

—D. HEARD.

See also absts. 1549 (complement-fixation in bovine TB.); 1552 (agglutination test in avian TB.); 1560 (tuberculin allergy in a horse); 1561 (tuberculin test); 1563 (loss of TB. resistance); 1564 and 1565 (BCG); 1569 (swine erysipelas vaccine); 1570 (swine erysipelas immunization); 1571 (aluminium sulphate vaccine against swine erysipelas); 1572 (value of adsorbate *E. rhusiopathiae* vaccine for sheep); 1573 (antigens of *E. rhusiopathiae*); 1577 (pullorum disease in turkeys); 1580-81 (strain 19); 1581 (*Brucella* antigen); 1594 (leptospirosis); 1602 (dourine); 1617-22 (F. & M. disease); 1625 (F. & M. disease, agglutination using rat blood); 1627 (rabies); 1628 (sheep pox); 1629 (small pox); 1634 (use of equine encephalomyelitis vaccine in man); 1640 (contagious ecthyma); 1645 (distemper); 1646 (fowl plague); 1649-51 (Newcastle disease); 1692 (in experimental *Bunostomum phlebotomum* infection in zebu calves); 1695 (allergy produced by *Ascaris* fluid and tissue).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

GUILHON, J. (1947.) Valeur insecticide et toxicité des sulfures de polychlorocyclane. [Insecticidal value and toxicity of sulphur derivatives of hexachlorocyclohexane].—*Rec. Med. vét.* 123. 145-152. 1666

The insecticidal value and toxicity are discussed of one disulphur and four monosulphur derivatives of hexachlorocyclohexane. The monosulphur derivatives appear to be mixtures of the derivative and unchanged hexachlorocyclohexane and are characterized by colour and smell. The insecticidal value of the sulphur derivatives is found to be comparable with that of crystalline D.D.T. or gammexane, using the dog louse, *Trichodectes canis*, and the bee, *Apis mellifica*, as test organisms.

The toxicity of the derivatives for animals *per os* is usually less than that of benzene hexachloride with the exception of the sheep which appears to be more sensitive to the derivatives. Symptoms induced by the derivatives are found to be identical with those produced by benzene hexachloride.—H. PAVER.

GRANETT, P., HAYNES, H. L., CONNOLA, D. P., BOWERY, T. G., & BARBER, G. W. (1949.) Two butoxypolypropylene glycol compounds as fly repellents for livestock.—*J. econ. Ent.* 42. 281-286. 1667

In an attempt to overcome the detrimental physiological effects of oil based fly repellents two butoxypolypropylene glycol compounds were found to mix readily with both oil and water. A 10% emulsion sprayed on to livestock (150 ml. per animal) in the field was found under certain [unspecified] conditions to give several days' protection against flies. Combined with pyrethrins these compounds were found to be both compatible and effective; 6.25 mg. pyrethrins per 100 ml. of 10% butoxypolypropylene glycol gave 92.5% knockdown in 10 min. and 51.5% kill in 24 hours.—M. J. LETHBRIDGE.

MORLEY, F. H. W. (1948.) The effect of flystrike on the scrotum on subsequent fertility of rams.—*Aust. vet. J.* 24. 94-95. 1668

Four cases of fly strike of the scrotum of rams in service were described. No significant effect on fertility after treatment was observed in three of the rams. The fourth case had a period of infertility commencing six days after treatment and lasting at least three weeks. M. considers that it is apparently often unnecessary to withdraw a ram from service because of a fly strike on the scrotum.—C. S. SAPSFORD.

MORRIS, K. R. S. (1944.) A large-scale experiment in the eradication of tsetse (*Glossina palpalis* and *G. tachinoides*).—*Farm & Forest.*

5. 149-156.

1669

M. reports the successful eradication of *G. palpalis* and *G. tachinoides*, during a four-year period, from 1,000 sq. miles in the north-west, Lawra district, of the Gold Coast. Previous to the period of eradication this area suffered severely from both endemic and local epidemic trypanosomiasis. Tsetse extirpation was effected by the selective clearing of certain definite plant associations, involving not more than 15 species of tree or shrub, in the vicinity of waterways.

It was observed that the distribution of the *palpalis* tsetse group was sharply restricted to these few plant species, during the Dec.-March, hot, dry season; removal of these "protective" plant communities, *per se*, during the dry season caused the complete disappearance of tsetse within the area concerned. Selective clearing is rapid, comparatively inexpensive and feasible, reducing the loss of vegetation and labour to a minimum; permanent results may be obtained by clearing from head-water and working downstream. Following the period of selective clearing, 90% fewer cases of human trypanosomiasis occurred in the area and 160 sq. miles of land was made available for grazing and farming.

M. names and discusses the various plant species intimately associated with the presence and breeding of the *palpalis* group and describes techniques for their removal. With particular reference to the Gold Coast, this paper also includes data on the gross habitats of *G. palpalis* and *G. tachinoides*, a brief history of trypanosomiasis, early attempts to control the disease and their disadvantages, the approximate cost of the selective clearing campaign and the advantages to be gained from the control of trypanosomiasis. The subsidiary control of *G. morsitans* in the district is also mentioned.—FERGUS McCULLOUGH.

DE AZEVEDO, J. F., CAMBOURNAC, F. J. C., & PINTO, M. R. (1945.) Sobre as preferências hemáticas das Glossinas da Guiné. [The blood preferences of *Glossina* in Portuguese Guinea.]—*An. Inst. Med. trop. Lisboa.* 2. 67-74. 1670

Nine hundred and eighty-six specimens of *G. palpalis* were dissected and blood was found in 94 of them. Smears were made in 69 of these and reptile blood was found in one, avian blood in three, ruminant blood in two and mammalian blood, non-ruminant, in 63.

Of 103 *G. sub-morsitans* dissected, six contained blood; in each case the blood was mammalian, non-ruminant.

Of 21 *G. longipalpis* dissected, mammalian, non-ruminant blood, was found in one.

In precipitin tests carried out using human, bovine, gazelle, canine and fowl blood as antisera with the blood obtained from the 94 *G. palpalis*, human blood was demonstrated in five, cattle blood in two, gazelle blood in one, sheep blood in two and dog blood in one. Fowl blood was not demonstrated in any sample. In one case both human and cattle blood was demonstrated; in another case human and avian blood. The remaining 81 samples were negative to all the antisera used. In precipitin tests carried out with the blood obtained from the six *G. sub-morsitans*, reactions were negative to all the antisera used and in tests with the blood from the one *G. longipalpis* there was a negative reaction to all the antisera.—F. A. ESTEVES.

FAIRCHILD, H. E., HOFFMAN, R. A., & LINDQUIST, A. W. (1949.) **A comparison of the chlorinated hydrocarbon insecticides for control of the sheep tick [ked].**—*J. econ. Ent.* 42. 410-414. 1671

Chlorinated hydrocarbon insecticides in concentrations of 0.2 and 0.5 % are as effective as rotenone in the control of the sheep ked (*Melophagus ovinus*) and the sheep are protected for 110 days. The authors noted that none of the insecticides which were used gave 100 % control in heavily fleeced animals when sprayed at a pressure of 300-350 lb. per sq. in.—M. J. LETHBRIDGE.

LEBAILLY, J. (1948.) **Traitement de la gale sarcoptique des équidés par l'hexachlorocyclohexane. [Treatment of sarcoptic mange in horses with hexachlorocyclohexane.]**—*Rev. vét. milit.* 3. 417-421. 1672

A note on the cure of sarcoptic mange in horse, using hexachlorocyclohexane (benzene hexachloride).—J. E.

BRANDER, G. C. (1949.) **Treatment of cattle mange.**—*Vet. Rec.* 61. 727-728. 1673

A record of the treatment of three outbreaks of sarcoptic mange in herds of about 70 cattle, groups of the affected animals being sprayed at intervals with varying dilutions of a suspension in

See also absts. 1584 (ticks in tularaemia); 1607 (antricide and *T. vivax* in tsetse flies); 1632 (mosquitoes in equine encephalitis); 1749 (ticks and tsetse flies); 1787 (horn flies).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

RUSSELL, A. (1949.) **The control of parasites (helminths).**—*Vet. Rec.* 61. 238-239. 1676

[Part of a joint discussion on the control of parasites in relation to preventive veterinary medicine (see also HORTON SMITH, *V.B.* 19. 598, and following abst.)]

The role of pasture management in control of parasites is discussed. The development of ley farming has not led to a marked reduction in

water of a 50 % benzene hexachloride wettable powder.

A solution of 0.25 % (0.081 % γ -isomer) gave uniformly satisfactory results; one treatment was sufficient in the early stages, but for general use two treatments at a ten-day interval were recommended.—D. W. JOLLY.

DOWNING, W. (1949.) **Control of ecto-parasites of domestic animals.**—*Vet. Rec.* 61. 239-248. 1674

In the course of a general discussion on the subject [see also preceding abst.] D. discussed the length of time ectoparasites can live away from their hosts. He spoke of the place of D.D.T. and benzene hexachloride in the therapeutic control of ectoparasites and of recent developments in the system adopted for their administration. Canépa and De Gama found that *Demodex canis* was present in the blood, lungs and lymph nodes of affected dogs and that this form of mange could be produced in puppies by oral administration of skin scrapings containing mites. D. observed large counts of mites in the faeces of dogs having no symptoms of demodectic mange.—M. J. L.

LAUDER, I. M. (1949.) **Demodectic mange. [Correspondence.]**—*Vet. Rec.* 61. 434. 1675

The use of phenamidine (4:4'-diamidinodiphenyl ether) on 21 confirmed cases of canine demodectic mange, with widespread lesions, is described. The first half of the series was injected [presumably subcutaneously] with phenamidine at the dosage rate of 3 ml. per 20 lb. body weight, followed by 1 ml. per 20 lb. once weekly for 3-4 weeks. The latter half of the series were given the same initial dose, but followed by 1.5 ml. per 20 lb. twice weekly for 2-3 weeks. The total amount of the preparation given was smaller than that recommended as the therapeutic dose by the makers. There was a marked improvement in three cases but the results were disappointing in the remainder. On three occasions the dog collapsed for 10-15 sec. after injection and later faeces were blood stained.

—D. W. JOLLY.

parasitism because the level of pasture infection is governed, not so much by the age of the pasture, but by the rate of stocking and the degree of infestations in the animals grazing it.

The importance of resistance and the ways in which this is acquired are discussed.—D. LUKE.

TURK, R. D. (1949.) **Liver flukes from a cat.**—*J. Amer. vet. med. Ass.* 115. 23. 1677

The opisthorchid fluke, *Amphimerus pseudo-*

felineus is reported to have been recovered from a domestic cat in Texas. The cat had symptoms of obstructive jaundice and died as a result of the infection.—S. BRIAN KENDALL.

ROMAGNOLI, A. (1949.) Distomatosi pancreatica nel gatto. [Pancreatic distomatosis in a cat.]—*Nuova Vet.* 25. 167-175. 1678

R. describes a case of *Opisthorchis tenuicollis* infestation in the pancreas of an old cat. After a month's illness, the animal was killed in a state of extreme emaciation. A P.M. examination revealed pulmonary strongylosis and hepatic cirrhosis, in addition to the pancreatic changes. The latter comprised perilobular and intralobular fibrosis and the parasites were found in the ducts, where they had induced chronic inflammatory changes.

—I. W. JENNINGS.

WETZEL, R. (1947.) Zur planmässigen Bekämpfung des Leberegels. [Planned control of liver fluke.]—*Dtsch. tierärztl. Wschr.* 54. 114-117. 1679

W. considers that subclinical distomatosis can be more costly to the farmer than typical liver fluke disease. He discussed control measures.

He advocated for cattle two courses of early treatment with hexachlorethane, the first when they are brought in in late autumn and the second eight weeks later, so that when put out to pasture in the spring they are free from infection. As pastures can be infected by latent fluke stages in young snails and by fluke eggs arrested in development by winter temperatures the cattle are treated again at the end of July when development of the parasites is reaching its peak. When pastures can be rested the summer treatment is unnecessary. Sheep should be treated twice before they are put out to pasture in spring and if they become re-infested from infested pasture two further treatments while at pasture are recommended.

—MARJORIE LATZKE.

CHANCE, M. R. A., & MANSOUR, T. E. (1949.) A kymographic study of the action of drugs on the liver fluke (*Fasciola hepatica*).—*Brit. J. Pharmacol.* 4. 7-18. 1680

Fresh flukes of bovine origin were suspended in Ringer's solution at a pH range of 6.5-8.5. Rhythmical kymographic records were obtained for up to six hours. The effect of various drugs was assessed by allowing them to act for a maximum period of 45 min. It was found possible to distinguish between drugs having stimulant, paralyzing and lethal effects. The chlorinated hydrocarbons (carbon tetrachloride, tetrachlorethylene and hexachlorethane) act as stimulants at low concentrations, but are lethal at higher concentrations. Hexachlorethane was believed to have a greater effect than other drugs of the group,

but under the same experimental conditions *ext. filix mas.* and gentian violet, neither of which is particularly satisfactory under *in vivo* conditions, were even more effective.—S. BRIAN KENDALL.

BEARUP, A. J. (1948.) Observations on the life cycle of *Diphyllbothrium (Spirometra) erinacei* in Australia (Cestoda: Diphyllbothriidae).—*Aust. J. Sci.* 10. 183-184. 1681

An infestation with *Diphyllbothrium (Spirometra) erinacei* was established in a kitten by feeding four plerocercoids obtained from the body cavity of a death adder (*Acanthopis antarctica*). After development of the coracidia the eggs were fed to several species of *Cyclops* commonly found near Sydney. A small number of proceroids developed in *Mesocyclops obsoletus*, *Cyclops australis*, and a *Leptocyclops* species. The feeding of these to frogs (*Limnodastes dorsalis*), skink lizards (*Leiopisma guichenoti*) and fish (*Gambusia affinis*) failed to produce plerocercoids. Nor did the feeding of the tissues of these animals to kittens produce infections. B. believes that *D. erinacei* is the common species found in cats and dogs in Australia.—M. T. SCOTT.

ANGELOTTI, S. (1947.) Contributo casistico sul "Cist. dromedarii" Pellegrini, 1945. [*Cysticercus dromedarii* in camels.]—*Bol. Soc. ital. Med. ig. trop. sez., Eritrea.* 7. 544-549. 1682

Of 835 camels examined in the slaughterhouse in Kisimayu, 205 were found to be harbouring *C. dromedarii* [see PELLEGRINI, V. B. 19. 615]. The tissues affected were liver (155 cases), heart (101), tongue (8), brain (7) and pectoral muscles (1). Of 643 cattle, only nine were infested with this *Cysticercus*; in all cases the brain was the organ affected, the cysts being generally under the pia mater or in the cortex. The numbers varied from 1-10 in individual animals.—I. W. J.

PELLEGRINI, D. (1947.) "Cisticercus dromedarii" Pellegrini, 1945 nel bovino. [*Cysticercus dromedarii* in cattle.]—*Bol. Soc. ital. Med. ig. trop. sez., Eritrea.* 7. 550-553. 1683

Following his report of the discovery of *C. dromedarii* in camels, P. noted the occurrence of the cyst in five out of 1,039 slaughtered cattle. As the incidence in the camel is 23% and in cattle 0.47%, it seems that the camel is the normal host and cattle are only the occasional hosts. In the five cases noted here, cysts were found in the heart (3), tongue (2), and the psoas muscle (1). P. suggests that *C. dromedarii* is not transmissible to man, and that therefore it is necessary to distinguish it from the *C. bovis* in the course of routine meat inspection.—I. W. JENNINGS.

PELLEGRINI, D. (1947.) Il Cisticercus dromedarii Pellegrini, 1945, è lo stato larvale della Taenia hyaenae, Baer, 1927. [*Cysticercus*

dromedarii the larval stage of *Taenia hyaenae*.]
—*Bol. Soc. ital. Med. ig. trop. sez., Eritrea.*
7. 554-565. 1684

In attempts to elucidate the life cycle of *C. dromedarii*, P. found that the hyena harbours a tapeworm, the scolex of which resembles that of the cysts found in cattle and camels.

After dosing a captive hyena with vermifuge, he gave it 74 cysts by mouth and subsequently recovered 57 tapeworms from the animal. Attempts to produce cysts in six cattle and two camels by feeding them with proglottides were not so successful, as only two cattle were found on P.M. examination to be harbouring the typical cysts. The tapeworm in question is described in detail and is named *T. hyaenae* by the author.

—I. W. JENNINGS.

PELLEGRINI, D. (1947.) Nel bovino la sede di predilezione del "*C. dromedarii*" Pellegrini, 1945, è nei gangli mesenterici. [*Cysticercus dromedarii* in the mesenteric lymph nodes in cattle].—*Bol. Soc. ital. Med. ig. trop. sez., Eritrea.* 7. 566-572. 1685

Further research on the predilection sites of *C. dromedarii* in cattle has led P. to conclude that the mesenteric lymph nodes are the usual sites for such infestation, and that cattle must now be considered normal hosts for the cysts. Out of 1,274 cattle examined, 117 or 9.18% were infested. The animals harboured the cysts in numbers ranging from 1-56. Altogether 383 cysts were found in the 117 animals, situated either in the cortex or the medulla of the mesenteric glands.—I. W. J.

KUITUNEN-EKBAUM, E., & FLEMING, Z. W. (1949.) A note on trichinosis in dogs of the Canadian North.—*Canad. J. publ. Hlth.* 40. 514-515. 1686

The diaphragm muscles of four dogs were examined. In two no trichinella were found; in one there were two larvae per g. of muscle examined. The larvae were well encysted; in some cysts there was partial calcification. In the fourth diaphragm there were about 10 larvae per g. of muscle.—T. MOORE.

BEARUP, A. J. (1949.) Examination of wild rats for *Trichinella spiralis*.—*Aust. vet. J.* 25. 229-230. 1687

Examination of 200 wild rats caught in warehouses and shops in the city of Sydney revealed no evidence of the local occurrence of *Trichinella* infections. The rats were examined by two or three of the following methods:—compression, digestion or feeding of muscle to other rats which were subsequently killed and examined.

—B. A. FORSYTH.

EMIK, L. O. (1949.) The effects of environmental and hereditary factors on trichostrongy-

lid worm infestation in sheep.—*J. Anim. Sci.* 8. 73-80. 1688

Trichostrongylid eggs in the faeces of a flock of lambs were collected by a technique modified from that of Caldwell. Samples were taken once a week for 12 weeks and duplicate dilutions examined. The data were analysed by statistical methods. Rams excreted more eggs than ewes but mutton breeds excreted approximately the same number as wool breeds. A very detailed analysis is presented, showing the significance of the many factors involved. "Heritability" was also investigated with the object of testing the relative resistance of different mating lines.

—F. B. LEECH.

LEECH, F. B. (1950.) Statistical analysis of results for successive tests on the same organism.—*Nature, Lond.* 165. 323. 1689

A note criticizing the statistical methods used by Emik [see preceding abst.] and others. Emik's deductions are based on an unsound statistical analysis which has attached significance to many factors apparently affecting the worm egg counts. It is pointed out that most of the tests of significance used are invalid. A more appropriate form of analysis is outlined.—F. B. LEECH.

GIBSON, T. E. (1949.) Further observations on the effect of small repeated doses of phenothiazine on strongylid infection in the horse.—*Vet. Rec.* 61. 451-455. 1690

Three horses were treated with daily 1 g. doses of phenothiazine for periods of one year with no symptoms of poisoning. One of the horses was housed and two were at pasture and in all three the faecal egg-count fell to a low level or to zero during treatment and for some six weeks afterwards. The larval infestation of the pasture was also reduced to a very low level.

G. suggests that, using this technique, it is theoretically possible to free horses and pasture from strongyloid parasites. However, there are various objections to this treatment, e.g. the possibility of the production of phenothiazine-resistant worms as a result of continued sub-curative dosage, and the care which the parasite-free horse might require in later life, lest it encounter infection when it possesses no acquired immunity.—GEORGE M. URQUHART.

BLOOMFIELD, S. S. (1949.) The toxicity of the chemical constituents of urine to the eggs and larvae of horse sclerostomes with a review of the literature.—*Canad. J. comp. Med.* 13. 277-284. 1691

Five of 25 constituents of urine were found to be toxic in solution, at their approximate concentrations in urine, for one or more of the three free-living stages of sclerostomes. Benzoic acid

was toxic for all three stages. Urea, ammonia, hippuric acid and sodium bicarbonate were lethal for pre-infective larvae only. Benzoic acid killed 50% of infective larvae and 50% of ova in 160 and 18 min. respectively. The lengths of exposure required to kill 50% of the pre-infective larvae were 50 hours, 31 min., 52 min., 19 min., and 43 hours respectively, for urea, ammonia, hippuric acid, benzoic acid, and sodium bicarbonate.

—R. GWATKIN.

SPRENT, J. F. A. (1946.) **Immunological phenomena in the calf, following experimental infection with *Bunostomum phlebotomum*.**—*J. comp. Path.* 56. 286-297. 1692

S. studied the resistance of six zebu calves to *B. phlebotomum* infections. Repeated applications of larvae to the skin produced a reaction characterized by local vascular changes, neutrophilic infiltration, and scab formation. The speed of onset and the extent of the reaction increased with successive re-infections, although the progress of the larvae did not seem to be checked. The histology of the lesion is described.

Artificially infected calves, and a calf given intravenous injections of hookworm extract were exposed for four months on infected pasture, after which they were killed. No larvae were found in the organs P.M. Larvae were present in each of two calves exposed to natural infection.

The results of skin sensitivity and precipitin tests are described, and the lesion produced by the adult hookworm is described and discussed.

—GEORGE M. URQUHART.

SARWAR, M. M. (1947.) **An account of two species of lungworms from Indian goats.**—*Indian J. vet. Sci.* 17. 63-67. 1693

S. describes two new species of lungworms, *Varestrongylus capricola* and *Protostrongylus indicus*, from wild goats (*Capra sibirica*). The former was distinguished from the type species *V. pneumonicus* by the absence of a spindle shaped gubernaculum. *P. indicus* is characterized by the size of the spicules and of the spicular sheath, the size of the vagina and eggs and the presence of a provagina.—K. N. MEHRA.

JUSSIANT, A., & CONZEMIUS. (1950.) Contribution à l'étude de la syngamose des gallinacés. [*Syngamus trachea* in fowls in the Belgian Congo.].—*Bull. agric. Congo belge.* 41. 131-136. 1694

Serious losses in young chicks are recorded and treatment is discussed. Lugol's iodine solution diluted with water and injected intra-tracheally in doses varying from 0.1-1.0 ml. according to size was found to be the most effective of various medicaments which were tested.

It is of interest to note that many adult fowls in the Congo harbour *S. trachea*. For this reason

the authors stress the importance of treating broody hens before they are set on eggs.—M. C.

SPRENT, J. F. A. (1949.) **On the toxic and allergic manifestations produced by the tissues and fluids of ascaris. I. Effect of different tissues.**—*J. infect. Dis.* 84. 221-229. 1695

Whole worms and isolated ascaris tissues were rapidly frozen at -76°C. and rapidly dehydrated in a high vacuum (lyophilized), and stored *in vacuo*. Saline in which worms had been living for 12 hours was also frozen, lyophilized and diluted with distilled water. From tests using these substances on rabbits, g. pigs and mice it was suggested that toxic effects, simulating anaphylaxis and previously described by other observers, were in fact in some cases due to unsuspected hypersensitivity in the experimental animals or to toxic substances occurring in the extracts as a result of protein disintegration.—S. B. KENDALL.

GRAHAM, G. L., & MARK, J. H. (1949.) **Giant kidney worm, *Diectophyme renale*, in a dog.**—*J. Parasit.* 35. 15. [Only abst. given, abst. from abst.] 1696

An account of infestation of a year-old bulldog. Details of the resultant illness are given. The affected kidney was removed and the dog's health became normal.

The source of the infestation is discussed.

DIKMANS, G. (1948.) **Skin lesions of domestic animals in the United States due to nematode infestation.**—*Cornell Vet.* 38. 3-23. 1697

D. described four cases of helminthic dermatitis in horses and mules. The lesions were present on the head, neck, body, and legs, and varied from small scurfy areas to raw bleeding sores. In each case larvae of *Onchocerca reticulata* were detected in scrapings.—G. M. URQUHART.

ROLLINSON, D. H. L. (1948.) **Severe symptoms and losses caused by faulty administration of phenothiazine pellets.**—*Vet. Rec.* 60. 40. 1698

A description of the injury typically caused to sheep by the unskilled and careless use of a balling gun used for the administration of phenothiazine tablets. The lesion is a traumatic pharyngitis, laryngitis or oesophagitis caused by the end of the gun. Death is caused as a result of infection by *Fusiformis necrophorus*.—J. E.

EVELETH, D. F., & GOLDSBY, A. I. (1950.) **Nicotine arsenate-copper sulfate as a sheep anthelmintic.**—*Vet. Med.* 44. 115-118. 1699

[Authors' summary copied *verbatim*.]

The toxicity of a nicotine arsenate-copper sulfate mixture has been determined. The arsenic content of the livers of sheep given various doses of arsenic has been determined. Anthelmintic value of nicotine arsenate and copper sulfate is reported.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

CHRISTIE, D. G. (1949.) **The leucosis disease complex of poultry.**—*Agric. Gaz. N.S.W.* 60. 216-220; 829-831. 1700

This is a popular article dealing with the manifestations of the leucosis complex, which is responsible for an average mortality of about 20 % in New South Wales flocks above chicken age. The various predisposing factors are discussed.

See also *absts.* 1834 and 1835 (fowl lymphomatosis).

Losses can be reduced if control measures are based upon available information concerning inherent resistance, susceptible ages and modes of transmission. Breeding should be carried out with older birds which have developed resistance to the disease, using breeds and strains in which a low incidence of leucosis has been observed.

—J. T. HAYSTON.

NUTRITIONAL AND METABOLIC DISORDERS

ASCHAFFENBURG, R., BARTLETT, S., KON, S. K., TERRY, P., THOMPSON, S. Y., WALKER, D. M., BRIGGS, C., COTCHIN, E., & LOVELL, R. (1949.) **The nutritive value of colostrum for the calf. I. The effect of different fractions of colostrum.**—*Brit. J. Nutrit.* 3. 187-196. 1701

ASCHAFFENBURG, R., BARTLETT, S., KON, S. K., WALKER, D. M., BRIGGS, C., COTCHIN, E., & LOVELL, R. (1949.) **The nutritive value of colostrum for the calf. II. The effect of small quantities of the non-fatty fraction.**—*Ibid.* 196-200. 1702

ASCHAFFENBURG, R. (1949.) **The nutritive value of colostrum for the calf. III. Changes in the serum protein of the newborn calf following the ingestion of small quantities of the non-fatty fraction.**—*Ibid.* 200-204. 1703

I. New-born bull calves were given an allowance of natural colostrum, or some of its fractions or a "colostrum substitute" for two days followed for 3-5 weeks by a standard diet based on dried skim milk. Only those calves the initial diet of which contained the aqueous, non-fatty phase of colostrum (about 7 l.) made satisfactory progress. The "colostrum substitute" consisting of reconstituted dried skim milk and margarine fat, fortified with several vitamins in high concentrations, did not protect calves against fatal diarrhoea.

II. The amount of non-fatty fraction of colostrum fed to new-born calves was reduced from 7,200 ml. to 3,000 and 900 ml. Four calves were used for each treatment and this had no marked adverse effect on the performance of the animals. When the amount was further reduced to 400, 200 and 80 ml. respectively, all calves still survived but had severe diarrhoea and gained little weight. Heating to 63°C. for 30 min. did not impair the protective value of the non-fatty fraction of colostrum.

III. Contrary to previous experience, measurable amounts of euglobulin were found in the sera obtained from new-born calves. In 18 calves fed varying amounts of non-fatty fraction of colostrum (80-400 ml.) the blood serum euglobulin did not

increase consistently. However, a simple serum turbidity test using a zinc sulphate solution which was developed to detect transfer of "immune lactoglobulins" proved sensitive when as little as 200 ml. of the fraction was fed.—E. EDEN.

BRUCE, H. M., & PARKES, A. S. (1949.) **Feeding and breeding of laboratory animals. IX. A complete cubed diet for mice and rats.**—*J. Hyg., Camb.* 47. 202-208. 1704

Using growth and reproduction of mice and rats as a criterion, among the five different cube diets tested the one that proved most satisfactory contained 45 % wholemeal flour, 40 % ground oats, 8 % fish meal, 1 % dried yeast, 3 % dried skimmed milk, 1 % cod-liver oil and 1 % sodium chloride. The digestible protein of this cube diet was 18.6 %, soluble carbohydrate 48.4 %, fat 4.5 % and the fibre content 1.4 %.—E. EDEN.

MITCHELL, H. H., BEADLES, J. R., KOEHLER, B., & DUNGAN, G. H. (1947.) **Impairment in nutritive value of corn grain damaged by *Nigrospora oryzae*.**—*J. Anim. Sci.* 6. 352-358. 1705

Maize infected with *Nigrospora oryzae*, a 53 % incidence by naked eye inspection, had a 100 kernel weight of 84 compared with 100 for sound grain of the same hybrid grown in the same field during the same year. No material difference in chemical analysis appeared; the digestibility of nitrogen of the infected maize was significantly less than that of the sound sample, but better utilization in metabolism was sufficient to render the nutritive equivalents for protein equal. The energy of the *Nigrospora*-infected maize is definitely, if only slightly, less digestible than that of sound maize, and appears to be less available in the metabolism of the growing rat.—H. PAVER.

MARSTON, H. R. (1948.) **Nutritional factors involved in wool production by Merino sheep. I. The influence of fodder intake on the rate of wool growth.**—*Aust. J. sci. Res. Ser. B.* 1. 362-375. 1706

MARSTON, H. R., & LEE, H. J. (1948.) **Nutri-**

tional factors involved in wool production by Merino sheep. II. The influence of copper deficiency on the rate of wool growth and on the nature of the fleece.—*Ibid.* 376–387. 1707
[Authors' summaries copied *verbatim*.]

I. The rate of wool growth (weight of wool produced per unit time), determined in seven sheep subjected to four levels of food intake, increased 400–600 *per cent.* from the lowest to the highest level of feeding and this change was reflected in both the mean length and in the mean diameter of the fibres, the relationship between these variables being characteristic of the individual sheep. The fibre diameter distributions were also affected, the individual fibres responding up to the limit of their capacities in proportion to their cross-sectional areas.

The nutritional factors involved in these changes were assessed from complete energy and nitrogen balances and the findings were interpreted in light of existing knowledge of the physiology of amino-acid utilization.

From the amino acid constitutions of the proteins in the diet and in the main products of these transactions (wool and flesh) it was estimated that the cystine and methionine content of the protein of diet 541 would limit to 27 *per cent.* the efficiency of its conversion to wool. Under the conditions of the experiment the efficiency of the utilization of the sulphur-containing amino acids for wool production was at its highest, 47 *per cent.*, when the best wool producer was in strongly positive energy balance, and at its lowest, 14 *per cent.*, when the poorest producers were close to energy equilibrium.

From these observations it was concluded that a Merino sheep grazing on natural pastures would rarely, if ever, exhibit its full wool producing propensity and, as a corollary, that the rate of wool production by a grazing sheep would vary considerably with the seasonal changes in its nutritional environment, and that this would be reflected in its wool staple. Experimental evidence to support this conclusion is submitted.

II. A range of nutritional states which varied in relatively small degrees from a normal physiological condition to one of acute copper deficiency was induced in a series of evenly matched groups of Merino sheep depastured on deficient terrain by providing them with supplements of copper which extended through suboptimum amounts to quantities in excess of their full requirements.

The copper and molybdenum intakes from the pastures were assessed and possible interactions are discussed.

The rate at which the syndrome of copper deficiency developed was governed by the quantity of copper provided in the supplement.

The amount of wool produced by the unsupplemented animals was materially less than that produced by those which received the copper supplements, the increments of increase in wool production above that of the unsupplemented level being related to the additional copper in the supplements by a curve of diminishing returns which reached the asymptote of wool production when the equivalent of between 7.5 and 10 mg. Cu/day was provided.

The capacity to impart crimp to the fibres began to be influenced when the concentration of copper in the systemic blood stream fell below approximately 0.4 mg. Cu/l. and this function failed completely at blood-copper levels <0.2 mg./l. A normal concentration of copper in the bloods of all animals which received supplements >10 mg. Cu/day was maintained and no untoward effects were suffered by these animals.

SCHREIBER, R. (1949.) Über die ernährungsphysiologischen Funktionen des Eiweisses in Hinblick auf die verschiedenen Leistungen der Wiederkäuer. [The nutritional functions of protein in respect of output in ruminants.]—*Dtsch. tierärztl. Wschr.* 56. 353–356. 1708

The importance of protein for the maintenance, growth, fattening, milk-production and muscular output in ruminants is discussed.

—E. EDEN.

DICKER, S. E. (1950). Changes in water and ion metabolism and in kidney functions during the development of oedema in rats fed on protein-deficient diets.—*Biochem. J.* 46. 53–62. 1709

In rats fed a low casein, high carbohydrate diet the onset of oedema coincided with a decrease in urine volume and appeared to be caused by water retention. When oedema was fully developed the urinary concentration of chlorine and sodium ions decreased, indicating a retention of these ions in the body.

On the deficient diet there was an early decrease in the glomerular filtration rate. At the same time there was an increase in the rate of tubular absorption. During the first 3–4 weeks on the deficient diet the clearance values of diodone (the diethanolamine salt of 3,5 diiodo-4-oxo-1,4-pyridine-acetic acid) and chloride and sodium ions remained normal, although later there was a marked decrease in these clearance values. An antidiuretic substance was demonstrated in the urine of rats on the protein deficient diet.

D. concludes that a renal factor is involved, in the onset and maintenance of oedema caused by protein deficiency.—D. LUKE.

ESH, G. C., & SUTTON, T. S. (1948.) The nutrition of the newborn dairy calf. II. Effect

of dietary tryptophan on the urinary excretion of niacin and its metabolites by young dairy calves.—*J. Dairy Sci.* 31. 909-912. 1710

Two young dairy calves, aged 24 hours and 40 days, respectively, maintained from birth on whole milk, were each fed 5 g. tryptophane daily for three days.

When the urinary excretion of total (free and combined) nicotinic acid (I), of N'-methyl nicotinamide (II), of other non-methylated metabolites (III) and of tryptophane (IV) during the test period was compared with that determined before and after, (I) had a three- to four-fold increase, but there was little change in the excretion of free nicotinic acid and (II). While there were indications that (II) is not the main metabolic product excreted by calves, (III) were responsible for the major portion of the increase. The excretion of (IV), however, was only 1-1.5% of the intake.

The relative lack of nicotinic acid, and abundance of tryptophane, in both colostrum and milk and consideration of these results indicate that tryptophane serves as a precursor of nicotinic acid required by the calf.—G. P. MARSHALL.

WEST, B. (1950.) **Exchange in cobalt chelate compounds.** [Correspondence.]—*Nature, Lond.* 165. 122-123. 1711

Equimolar portions, with respect to cobalt, of chelate compounds and cobalt sulphate containing radio-active cobalt 60 were mixed. The amount of cobalt taken up by the chelate compound after various time intervals was determined. Complete exchange occurred with disalicylaldehyde within 50 sec., with guaiacol within two and a half hours. With trisethylenediamine chloride no exchange occurred over 24 hours and with disalicylaldehyde a slight exchange occurred provided the temperature was raised. A positive correlation was observed between the tendency to form chelate compounds with cobalt and the paramagnetism of the compound.—E. EDEN.

O'DONOVAN, J. (1949.) **Soil copper deficiency in County Offaly, Ireland.** [Correspondence.]—*Nature, Lond.* 164. 759. 1712

A report of a heifer with extreme emaciation and continuous diarrhoea. Treatment for parasitic infestation was ineffective, but recovery was rapid after giving copper sulphate drenches.

—P. H. HERBERT.

GERRITSEN, I. H. J. (1947.) Rapport over een bemestingsproef met koperslakkenbloem ter bestrijding van de zoo gevreesde lik-(lek-) zucht of "teeuwsigheid" bij het vee tengevolge van een gestoorde koperhuishouding op rivierkleigrond te Bergharen (Land van Mass en Waal). [Report of a manuring test with ground

basic slag rich in copper in an effort to control pica in cattle at Bergharen.]—*Tijdsch. Diergeneesk.* 72. 243-244. 1713

This is an addendum to Gerritsen's earlier paper [see *V. B.* 18. 509]. It is now noted that the copper content of the blood serum does not improve immediately on transferring animals to Cu-treated pastures and that their transfer back to Cu-deficient grazing is not accompanied by an immediate decrease in blood serum Cu. This value may be low in animals feeding on grasses in which the Cu-content is not abnormally low. The problem needs further and more extensive investigation.—P. L. LE ROUX.

SEEKLES, L. (1949.) Carences réelles et conditionnées des oligo-éléments. [Trace elements and deficiency diseases.]—*Rec. Méd. vét.* 125. 797-811. 1714

A brief description is given of the various symptoms of diseases caused by a deficiency of trace elements. The reactions involving these elements in the enzyme systems of the body are conveniently tabulated. Experiments on the absorption of radio-active copper are recorded and a special section deals with manganese. Finally the mineral content of pastures in Holland is discussed.—E. EDEN.

SNOOK, L. C. (1949.) **Phosphorus deficiency in dairy cows: its prevalence in South Western Australia and possible methods of correction.**—*J. Dep. Agric. W. Aust.* 26. 169-177. 1715

Subnormal blood inorganic phosphorus levels are common in dairy cows in parts of the South-West Division of Western Australia. The persistence of subnormal values throughout the winter despite an abundance of green mixed pasture containing 0.28-0.4% P in the dry matter is explained by the probability that cows producing more than three gal. of milk per day cannot eat enough green herbage to satisfy their phosphorous requirements, even when the pasture is at its best. For most of the year, the herbage and meadow-hay supply only enough phosphorus to meet the requirement of a cow producing two gal. daily.

Normal blood inorganic phosphorus levels were restored and maintained by the feeding of commercial phosphate supplements or by the addition of pure sodium phosphate or superphosphate to drinking water at the rate of five lb. per 100 gal. It is suggested that phosphate supplements should be fed to good quality dairy cows throughout the year.—R. L. REID.

ANON. (1949.) **Further notes on phosphorus deficiency in dairy cows.**—*J. Dep. Agric. W. Aust.* 26. 280-281. 1716

The effective use of superphosphate as a

phosphate supplement for dairy cows, in the form of a saturated solution used to damp down feed, is discussed.—R. L. REID.

FLETCHER, J. M., & ROBERTSON, R. H. S. (1950.)
Fluorine and teeth.—*Research*. 3. 28–27. 1717

A summary of the fluorine content in some common foods and of the water supplies of different parts of the United Kingdom is given. Small amounts of fluorine in the diet of children prevent dental caries, but excessive amounts cause mottling and large doses are toxic. Without further experimental work it is difficult to recommend an exact figure for fluorine requirements, but it is considered that the drinking water should contain between 0.2–1 p.p.m. of fluorine. If this level is not reached supplementation is advocated.

—E. EDEN.

DIERNHOFFER, K. (1948.) "Osteoporose" bei Junggrindern in Niederösterreich. [**Osteoporosis of calves in Austria.**]—*Wien. tierärztl. Mschr.* 35. 592–595. 1718

A deficiency disease affecting weaned calves aged 4–18 months was observed on a farm with about 150 milch cows and the appropriate number of calves. Their diet consisted of concentrates from brewery and distillery waste products in addition to green fodder and bran. In about 30 of the weaned calves there was anaemia, inappetence, general emaciation and weakness, slight to marked swelling of the fetlock, carpal and tarsal joints caused by excess of synovial liquid in the joint capsule. Tests for *Brucella abortus* and examination of faeces for worms were negative. D. excluded rickets and osteomalacia because the diet contained adequate calcium and phosphorus and because milch cows and unweaned calves were not affected.

All calves between 4–18 months of age were put on a diet rich in proteins and vitamins of the B group and were given additional daily doses of a preparation containing trace elements. Ten g. per head of potassium iodide were mixed into the fodder over a period of six days. All affected calves recovered and no new cases were recorded.

—E. G.

COATES, M. E. (1949.) **The fat-soluble vitamins in poultry nutrition.**—*Brit. J. Nutrit.* 3. 261–266. [Author's conclusions copied *verbatim*.] 1719

It is clear that under practical conditions the requirements of poultry for vitamins E and K will be adequately met by the inclusion of cereal grains and green feed. Birds kept extensively will synthesize most of the vitamin D required through the action of sunlight, and will have little need of an additional source; the normal vehicle for the addition of vitamin D is fish-liver oil, 0.5–1 % of

cod-liver oil being ample under intensive conditions. Although cod-liver oil also contributes sufficient vitamin A its stability in this respect is doubtful, and the carriers of carotenoids, such as maize and dried grass, are probably preferable as sources of vitamin A. Caution in the use of cod-liver oil is advisable, as a surplus may do more harm than good by destroying the vitamin E in the other components of the diet.

WHARTON, F. D., MATTERSTON, L. D., SCOTT, H. M., & BLISS, C. I. (1949.) **The vitamin A requirement of growing turkeys.**—*J. Nutrit.* 39. 543–554. 1720

Using 228 one-day-old, male Broad Breasted Bronze turkeys divided into eight groups, the vitamin A content of the diet was varied from 0–7,200 I.U. per 100 g. of feed and the optimum growth response was obtained when the birds were given approximately 1,700 I.U. per 100 g. At this level the vitamin A concentration in the blood was also optimal and the liver stores were satisfactory. Histopathological examination of the nose and brain did not prove to be a satisfactory criterion of vitamin A status.—E. EDEN.

VAN METRE, J. E., Jr. (1947.) **The influence of hypervitaminosis A on bone growth.**—*Johns Hopk. Hosp. Bull.* 8. 305–311. [Abst. in *Biol. Abstr.* Sect. F. 22. 13. (1948), slightly modified.] 1721

A vitamin A concentrate containing 500,000 I.U./g., distilled from fish liver and vegetable oils was used in the experiments. This was fed by mouth. Bone growth was measured by x-ray of the long bones and alterations were noted by gross and histologic studies of the bones. Hypervitaminosis A produced accelerated remodelling of the tibia of the growing weanling rat. This was proportional to the amount of A given. There was a retardation in the longitudinal growth of the tibia which was also proportional to the amount of A administered.

JONES, T. C. (1949.) **Riboflavin and the control of equine periodic ophthalmia.**—*J. Amer. vet. med. Ass.* 114. 326–329. 1722

The incidence of periodic ophthalmia in a group of army horses had been high in 1943 but fell to zero from 1944 onwards to 1947, following the addition of 40 mg. of crystalline riboflavin to the diet. Although the incidence of new cases fell to zero, relapses continued to occur in already affected horses. In control groups not receiving riboflavin new cases continued to appear.

The riboflavin was supplied by mixing 40 g. riboflavin with 1,000 lb. of wheat bran and giving each horse 1 lb. of the mixture daily.

A severe outbreak of the disease was also studied in 1945 in a civilian stable where 25 out

of 98 horses were affected. A feature of the feeding was that the hay and other fodders had been badly weathered as a result of heavy rainfall and were found to have a low riboflavin content. The addition of riboflavin to the diet terminated the outbreak in that no new cases occurred.—M. C.

THOMSON, W., & TOSIC, J. (1949.) "Fodder yeast" as a dietary supplement for sheep maintained on poor-quality hay.—*J. agric. Sci.* 39. 283–286. [Authors' summary copied *verbatim*.] 1723

When growing Cheviot hogs were wholly maintained indoors on a very poor quality hay fed *ad libitum* they had a low food intake and consequently were losing weight. A 40 g. supplement of "Fodder Yeast" greatly increased the hay intake of the sheep, and this was accompanied by a steady gain in body weight. Increase in body weight appeared to be accountable for by the increase in food consumption. These findings, obtained in a pilot experiment, require confirmation with a larger flock of sheep.

LUECKE, R. W., McMILLEN, W. N., & THORP, F., Jr. (1950.) Further studies of pantothenic acid deficiency in weanling pigs [paralysis].—*J. Anim. Sci.* 9. 78–82. [Authors' summary copied *verbatim*.] 1724

Pantothenic acid deficiency was produced experimentally by feeding a low-protein ration containing corn and soybean oil meal supplemented with thiamine, riboflavin, nicotinic acid and pyridoxine. When, however, the unsupplemented corn-soybean ration was fed, no symptoms of locomotor incoordination were produced in the ten-week experimental period. The growth rates of the pigs in the unsupplemented lot, however, were very poor. The reasons for these differences are discussed.

The basal ration used to produce pantothenic acid deficiency contained by analysis, 4.21 mg. of this vitamin per pound. The addition of calcium pantothenate to the corn-soybean basal ration resulted in significantly greater gains than made by the pigs fed the unsupplemented basal ration. Two pigs in the pantothenic acid deficient lot were completely paralyzed in the hind quarters.

Blood levels of pantothenic acid in pigs showing symptoms of deficiency were approximately two fifths of those in the normal control group.

DUCKWORTH, J., & ELLINGER, G. M. (1949.) The requirements of poultry for aneurin, choline, folic acid, nicotinic acid, pantothenic acid and riboflavin.—*Brit. J. Nutrit.* 3. 253–260. [Authors' summary copied *verbatim*.] 1725

A compilation of data on the amounts of certain vitamins in some common poultry feeding-

stuffs is given. Information on vitamin requirements to supplement the (U.S.A.) National Research Council's standards is presented. The adequacy of the vitamin content of typical poultry rations complying with Ministry of Food regulations has been assessed.

HIMSWORTH, H. P., & STEEL, J. D. (1949.) Discussion: liver damage of metabolic origin.—*Proc. R. Soc. Med.* 42. 201–206. 1726

H. gave a concise account of the production of the two morphologically distinct dietetic lesions of the liver of animals. He dealt with the post-infiltrative diffuse hepatic fibrosis, indistinguishable from Laennec's portal cirrhosis, which can be produced by a deficiency of the lipotropic factors, choline and methionine. He enumerated the factors that were found to cause acute massive necrosis of the liver, such as a deficiency or a gross excess of cystine, a deficiency of tocopherol, and selenium and chlorinated hydrocarbon poisoning, and he pointed out that they probably act by interfering with the sulphur metabolism of the liver.

S. discussed: (i) Facial eczema of sheep and cattle in New Zealand, a condition associated with a primary liver damage of unknown aetiology and a secondary photosensitization by a porphyrin, phylloerythrin.

(ii) Enzootic jaundice of sheep, a condition which occurs in Australia and is characterized clinically by icterus, anaemia, and haemoglobinuria and pathologically by liver damage. Grazing on heliotrope, and a high copper concentration of the liver have been associated with the disease.

(iii) Kimberley horse disease or walk about disease, which is caused by the ingestion of *Atalya hemiglauc*a or whitewood. The poisonous principle, saponin, produces a cirrhosis of the liver and pronounced nervous symptoms somewhat similar to the syndrome produced by poisoning caused by the various species of *Senecio* or ragwort.

—T. W. F. PAY.

ROBERTSON, A., BURGESS, J. W., INGLIS, H., & PAVER, H. (1948.) Observations on gastric decompression and intravenous saline administration in acute grass disease.—*Vet. Rec.* 60. 495–498. 1727

Following an analogy between acute grass disease of horses and acute intestinal obstruction in man and other animals, which suggested the trial of treatment on similar lines, the techniques are described for continuous gastric decompression and intravenous saline administration in the horse. Simultaneous treatment by both methods of three clinical cases of acute grass disease produced spectacular though temporary

alleviation of all clinical symptoms except that of intestinal impaction. Administration of various intestinal stimulants failed to give a cathartic effect on the dry contents of the colon even after horses had become normal to outward appearance as the result of gastric decompression and intravenous administration of saline. In a discussion of the clinical and P.M. findings, the authors suggested the neurogenic nature of the interference with gastro-intestinal function and likened the condition to that of neurogenic ileus in man.

—R. O. MUIR.

SHIER, F. L., & ROSSITER, R. C. (1949.) **Clover disease: practical findings and recommendations for control.**—*J. Dep. Agric. W. Aust.* 26. 111-116. 1728

This is a brief discussion on the practical aspects of the infertility manifested by ewes in certain regions of Western Australia where the pastures are composed predominantly of early (Dwalganup) subterranean clover. Recommendations are made for the control of the disease. It is considered that clover dominant paddocks should be used for meadow hay, affected flocks should be kept solely for wool or mutton production, infertile ewes culled from the less affected flocks, ley farming should be instituted on clover dominant areas, and pasture improvement pursued by introducing and encouraging species other than clover, by topdressing and by avoiding over-grazing. It is suggested that many sheep farmers could profitably change over to the production of baby beef.—C. R. AUSTIN.

BRAUDE, R., & COTCHIN, E. (1949.) **Thiourea and methylthiouracil as supplements in rations of fattening pigs.**—*Brit. J. Nutrit.* 3. 171-186. [Authors' summary copied *verbatim*.] 1729

The possibility was investigated of influencing favourably food utilisation and carcass quality of pigs by the addition of antithyroid drugs to the diet. With thiourea, owing to its bitter taste, the pigs refused much food with consequent retardation of growth. No detrimental effects were noted when similar doses of the drug were given as a drench. The observed changes in carcass quality could be attributed to the altered growth rate.

Methylthiouracil also affected the appetite and the growth rate of some pigs. This effect, apparently cumulative, could not be attributed solely to the unpalatability of the drug. One pig receiving methylthiouracil changed from the bacon to the lard type of conformation and there was an indication that other pigs become shorter, rounder, fatter and lower on their legs than controls not receiving the drug.

Though food utilization was slightly improved with some pigs, the effects of the drugs on appetite

and growth would make their use in pig feeding uneconomical.

HORLICK, L., & KATZ, L. N. (1949.) **Regression of atherosclerotic lesions on cessation of cholesterol feeding in the chick.**—*J. Lab. clin. Med.* 34. 1427-1442. [Authors' summary slightly modified.] 1730

Prolonged feeding of a diet containing 2 per cent cholesterol in cottonseed oil for a period of twenty-four weeks resulted in progressive elevation of the blood cholesterol levels. There was increasing severity of the atherosclerosis for a period of fifteen weeks and then a levelling off, with a further increase in severity during the last two weeks of the experiment.

Cessation of cholesterol feeding after ten weeks is followed by a very rapid decline in the blood cholesterol levels to normal within three weeks. There was also a gradual regression in the severity of the lesions over a fourteen-week period. It appears that early lesions may be completely resorbed upon cessation of cholesterol feeding, while more severe lesions undergo regressive and reparative changes.

There appeared to be little difference in the rate of regression or disappearance of the aortic lesions in birds placed on a normal mash diet and those placed on a low fat, cholesterol-free diet following cessation of cholesterol feeding.

There is a wide spectrum of histologic changes resulting from prolonged cholesterol feeding, ranging from increase in the ground substance of the intima, with infiltration of sudanophile material, to very extensive foam cell plaques, hyaline and cartilaginous metaplasia, and heavy deposits of calcium in granules and plates.

Cessation of cholesterol feeding is followed by fibrotic changes in lesions of both the thoracic and abdominal portions of the aorta, by the disappearance and diminution of foam cells and fat, and by the calcification of atheromatous abscesses. The authors also noted the presence of scavenger-like, fat-filled cells in the intima.

The controls showed few gross lesions but numerous microscopic ones. Scattered focal deposits of sudanophile material were seen in the intima and inner portions of the media of the thoracic aorta. In the abdominal aorta the spontaneous lesions were characterized by fibrosis of the intima, with sudanophile deposits and calcium granules at the intimal-medial junction.

The presence of a physiologic mechanism concerned with the regression of atheroma in animals and man is discussed, and the application of modern dynamic principles of lipid metabolism to this mechanism is considered.

ABELL, M. R., & BEVERIDGE, J. M. R. (1949.) **The production of acute massive hepatic**

necrosis in rats by dietary means.—*Canad. J. Res. Sect. E.* 27. 316-319. [Authors' abst. copied *verbatim*.] 1731

Acute hepatic necrosis has been produced in every rat of a group fed a diet low in protein, relatively deficient in the tocopherols, and containing cod liver oil and rancid lard. The evidence suggests that the latter two components have been instrumental in effecting this high incidence of liver necrosis, possibly by means of their well known deleterious action on the tocopherols.

PAGÉ, E., GINGRAS, R., & GAUDRY, R. (1949.) L'action anémiant de deux antagonistes de la lysine: L'hexahomosérine et l'acide α -amino-adipique. [Anaemia caused by α -amino- ϵ -hydroxy caproic and α -amino-adipic acids.].—*Canad. J. Res. Sect. E.* 27. 364-373. [In

See also abst. 1842 (book, livestock diseases).

DISEASES, GENERAL

KRISHNAMURTHY, D. (1949.) A note on "Bovine lymphangitis" in Madras province.—*Indian vet. J.* 25. 249-261. 1733

K. reviewed this condition referring to work done in India and in other countries and he gave a general idea of its incidence with tables and a graph of its incidence in Madras.

Pasteurella organisms were present in 1,082 out of 2,833 specimens, mostly from advanced cases.

In a few experiments undertaken no evidence was found that either *Hyalomma aegyptium* or *Boophilus annulatus* spread the disease.

[In two places there is the statement that the disease occurs almost entirely in cattle and only to a small extent in buffaloes. The tables and text indicate clearly that it is the other way round.—Ed. V. B.].—M. P. JOHARI.

HUCHET, J. (1945.) La myosite éosinophilique des bovidés. [Eosinophilic myositis in cattle.].—*Thesis, Alfort.* pp. 58. 1734

H. defined the condition as a lesion of the muscle tissue affecting some or all of the voluntary muscles and characterized by the existence of green spots in association with a local eosinophilia and classified it with interstitial myositis. The history, geographical distribution, symptomatology, diagnosis, pathogenesis and aetiology of the disease are discussed. Although he has no conclusive views on the aetiology, H. does not agree with the opinion that this condition is of parasitic origin. But while admitting the incompleteness of the evidence—the disease having been diagnosed only after death—he considers that it is a leucaemia. Meat inspectors are advised to condemn the entire carcass.—L. M. MARKSON.

French, authors' English abst. copied *verbatim*.] 1732

The addition of hexahomosérine (α -amino- ϵ -hydroxycaproic acid) to complete rations produces growth inhibition, anemia, and a considerable rise in blood plasma amino nitrogen in the rat. Simultaneous administration of lysine prevents the anemia and partially restores growth but does not affect the amino nitrogen level in the plasma. These effects of hexahomosérine and the antagonistic action of lysine are even more striking in animals previously depleted of lysine. Amino-adipic acid cannot replace lysine in the ration and it produces anemia in lysine-depleted rats. Its action is also counteracted by lysine. Liver concentrates and folic acid are ineffective in the prevention of the anemia caused by hexahomosérine.

NANDA, P. N., & LALL, H. K. (1946.) A note of clinical aspects of "Kherwan Disease".—*Indian J. vet. Sci.* 16. 223-231. 1735

The authors give a general account of a disease of cattle in West Punjab, named after the place of its occurrence. It has a seasonal incidence and serious mortality occurred during years when grazing was exceedingly poor and particularly in months when the rainfall was high and the maximum and minimum temperatures and humidity were relatively lower than those in normal years. Attempts to transmit the disease to healthy animals were unsuccessful.—J. M. LALL.

GIBBONS, W. J., SHOFFEITT, P. E., & FOLSE, D. S. (1949.) DDT and X disease.—*J. Amer. vet. med. Ass.* 115. 364-366. 1736

Statements, occurring in the literature, that the aetiology of the so-called "X" disease may be connected with the use of D.D.T. are criticized. In cattle chemical examination of body fat, brain, liver and kidney, failed to reveal the presence of D.D.T. in a series of six cases of "X" disease positively diagnosed by clinical and P.M. examination.—H. PAVER.

EVELETH, D. F., BOLIN, F. M., GOLDSBY, A. I., & FORD, K. D. (1948.) Urinary calculi of lambs.—*Bull. N. Dak. agric. Exp. Sta.* 10. 149-157. 1737

The authors discuss experiments conducted during the past ten years and record observations on the various causes of urolithiasis enumerated by Newsom, such as hard water, vitamin A deficiency, mineral imbalance, pH of urine, hyperparathyroidism, and infection. Their conclusions are not always clear, but they were

apparently unable to identify any one of these factors as the sole cause of urinary calculi formation in sheep examined under experimental and field conditions, and they appear to favour the theory that multiple factors are involved in the aetiology.

—T. W. F. PAY.

Savage, A. (1948.) **Some lessons from swine autopsies.**—*Canad. J. comp. Med.* 12. 65–68. 1738

In order of their frequencies the conditions most commonly met in 1,600 dead pigs submitted for P.M. examination during the past ten years were *Erysipelothrix rhusiopathiae* infection, haemorrhagic septicaemia, gastro-enteritis, anaemia and ascariasis.

The diseases are discussed in a general way with respect to the P.M. findings and the treatment found most satisfactory.—J. W. PULLIN.

LUKE, D., & GORDON, W. A. M. (1950.) **Oedema of the bowel in pigs.** [Correspondence.]—*Nature, Lond.* 165. 286. 1739

Serum protein was estimated in samples from 44 pigs from litters in which deaths from oedema of the gut had been occurring and from a number of controls. The average serum protein in the controls was 6.64% varying from 5.5–8%. In the contact and affected pigs (most of these were contacts and had no symptoms of the disease) it was 4.68% varying from 2.5–7%. None of the sick pigs had a serum protein level exceeding 5%. It is suggested that oedema of the gut is associated with a hypoproteinaemia.—M. C.

DOW, R. S., ULETT, G., & TUNTURI, A. (1945.) **Electroencephalographic changes following head injuries in dogs.**—*J. Neurophysiol.* 8. 161–172. [Authors' abst. in *Biol. Abstr.* 20. No. 5. p. 13. (1946), slightly amended.] 1740

107 concussion experiments were done on 2 cats and 17 dogs under local and general anaesthesia. A pendulum was used to strike the freely moving head. Some animals were trained with a conditioned reflex technique called correct conditioned differentiation and their post-concussion behaviour was correlated with electroencephalographic changes. The dog seems less susceptible to the effects of impacts delivered to the freely moving head than is the cat. Impacts of equal intensity cause more marked effects on the animal under general anaesthesia than in the animal with only local anaesthesia. Of all the elements of the electro-encephalogram in the nembutal anesthetized animal, the ones which seemed most susceptible to the effects of trauma were the spindles of relatively high voltage activity characteristic of the record of animals anesthetized with the barbituric acid derivatives. Evidence is presented which indicates that con-

cussion has a direct paralyzing effect temporary in character, independent and beyond any mechanical stimulation of neurones. Head injuries affect correct conditioned differentiation responses more easily and for a much longer time than they affect reflex activity and more vital functions. Correct conditioned differentiation appears to be a more delicate index of cerebral cortical function than is the electroencephalogram as it is usually obtained at the present time.

STONEBRINK, B. (1949.) "Round heart disease" bij kippen. [Round heart disease in poultry.]—*Tijdschr. Diergeneesk.* 74. 337–341. [English summary.] 1741

The occurrence of "round heart" disease is recorded in the Netherlands. Eight flocks were involved and the disease occurred between December and February. Mortality averaged over 20%.—D. LUKE.

HUNTER, A. R. (1949.) **A new type of encephalopathy after general anaesthesia.**—*Lancet.* 256. 1045–1048. [Author's summary copied *verbatim*.] 1742

A new type of encephalopathy, which appears after general anaesthesia, is described. It is characterised by the onset of light coma without any very definite localising signs in the nervous system some hours after recovery from general anaesthesia. The usual necropsy findings are congestion of the brain, multiple subarachnoid haemorrhages, and some areas of cerebral softening. The cause is not clear, but it is certainly not ordinary cerebral thrombosis, nor is it anoxia. The condition appears to be a new clinical entity which has made its appearance in the last few years.

LYNCH, M. J. G., & SHORTHOUSE, P. H. (1949.) **Injuries and death from lightning.**—*Lancet.* 256. 473–478. 1743

Two cases of fatal lightning stroke in human beings are described. Autopsy revealed haemorrhagic necrosis of the pancreatic tail (not previously recorded in the literature), keraunographic marks on the body surface, and various degrees of patchy tigrolysis in the cerebellum, olivary bodies, orbital cortex, etc.—W. R. BETT.

PHARRIS, C. (1948.) **Ultrasonic sickness.**—*Amer. Indust. Hyg. Ass. Quart.* 9. 57–62. [Abst. from abst. in *Bull. Hyg., Lond.* 24. 333–334. (1949). Signed: E. L. MIDDLETON.] 1744

Ultrasonic sickness, or supersonic sickness, is an indistinct condition attributed to exposure to noise frequencies of the ultrasonic ranges. The terms supersonic and ultrasonic are often used interchangeably, but there is a tendency to use the word supersonic in describing speed of travel and ultrasonic in reference to ranges of hearing. The subjective symptoms of ultrasonic sick-

ness, such as headache, nausea, dizziness, disturbances of equilibrium, fatigue, temporary loss of hearing, tinnitus, altered sensations, etc., are similar to disturbances experienced with sonic noise. They are not pathognomonic of any specific changes and they appear to be temporary and of neurotic origin. Opinions are still divided on the question of possible effects of supersonic speed and the related ultrasonic noise; the subject is being studied intensively under the auspices of the American Services and by the Royal Air Force.

The principal components of the noise spectrum are intensity and frequency. Noise exposures of test operators in control rooms with jet engines range upwards to 110 decibels at the control panels, and, in certain tests, over 140 decibels have been noted. The frequency ranges produced by jet engines may extend from the infra-audible, through audible, to ultra-audible

ranges. High-frequency noise is more likely to injure hearing than low-frequency noise. Sound analyses in control rooms with jet engines have shown frequencies from 30 to 120 cycles per second. Extremes of jet frequencies of 100 to 200,000 falling off rapidly above 20,000 cycles per second, have been recorded.

Control of noise is a matter for aeronautical engineering methods of reducing noise output and of masking the noise by acoustical control. Adequate protection may necessitate the use of personal protective equipment. Properly designed ear defenders of the insert type have attenuating effects up to 45 decibels, but in practice they may reach only 20–25 decibels. The ear-muff types give greater protection, but maintenance is more difficult; both types, used together, can reduce intensities by about 40–45 decibels. The use of resilient foot pads and thick clothing gives additional protection.

POISONS AND POISONING

EGEHØJ, J. (1947.) **A survey of some Scandinavian toxicologic observations.**—*J. Amer. vet. med. Ass.* 110. 886–889. 1745

Substances recorded as having caused poisoning in Scandinavian domestic animals are listed and include zinc, arsenic, thallium, mercury, chloral hydrate, carbon tetrachloride, acetic acid, *Rhamnus cathartica*, and *Scilla maritima*. Symptoms, P.M. findings and treatment are discussed briefly.—H. PAVER.

PRAIN, J. H. (1949.) **Fatal poisoning of an infant by anti-anaemic pills containing iron, manganese, and copper.**—*Brit. med. J.* Nov. 5th. 1019–1020. 1746

An infant, aged 11 months, ingested several anti-anaemic pills containing iron, copper and manganese in the form of sulphates. Death occurred after 39 hours. Positive results were obtained for iron, copper and manganese in the gastric and caecal contents and in the bile and urine. Severe gastritis and fatty degeneration of the liver were also observed. [Iron compounds are frequently used in veterinary medicine and the possible danger to young animals is obvious.]

—E. EDEN.

KRÜGER, E. (1949.) **Nachweis fluorhaltiger Industrieexhalationen durch Analyse von Rinderharn. [Fluorine content of cattle urine in some industrial areas.]**—*Dtsch. tierärztl. Wschr.* 56. 925. 1747

Four cattle grazed on pastures contaminated by industrial exhausts and giving on analysis 0.8 to 1.25 mg. of fluorine per g. of dry matter had definite signs of fluorosis and the fluorine content of the urine ranged from 21.90 p.p.m. whereas

that of two other animals grazing on normal pasture was only 0.3 p.p.m.—E. EDEN.

COMBEN, N. (1949.) **Deafness following coal gas poisoning in the small animals.**—*Vet. Rec.* 61. 128. 1748

Two cats and one dog, exposed to coal gas until they became unconscious, were deaf on recovery and the dog was also completely mute. Normal hearing was regained in the cats after 21 days; the dog became sensitive to loud noise after 14 days, barked again after 21 days, but after six months, hearing, although improved, was not fully restored. This sequela to coal gas poisoning in small animals is apparently not uncommon.

—H. PAVER.

WILSON, S. G. (1948.) **The feeding of "Gam-mexane" and DDT to bovines.**—*Bull. ent. Res.* 39. 424–434. 1749

Experiments to determine the toxicity of benzene hexachloride, using a crude powder (D.929) containing 13% of the γ -isomer, and D.D.T. to cattle, and the effect on blood-sucking parasites of oral administration of these insecticides to cattle, are described. Preliminary experiments indicated that benzene hexachloride was the most promising of the two and was therefore used in most of the tests. *Rhipicephalus appendiculatus* and *Glossina palpalis* were used to assess the biological effect.

Adult cattle tolerated benzene hexachloride better than calves, a dose of 0.5 g. per kg. to a calf on two successive days producing characteristic toxic symptoms and death after 90 hours. A tolerated dosage of 0.25 g. per kg. on two successive days, followed by 0.125 g. per kg. on the third

and fourth days, gave a blood concentration of the drug which was lethal to feeding tsetse and ticks for 41 days; but, while a single dose of 0.25 g. per kg. stopped engorgement of parasites for 10–12 days, it failed to prevent infection with *Theileria parva* during this time. Weekly, but not fortnightly, doses of benzene hexachloride at 0.25 and 0.125 g. per kg. protected a calf from East Coast fever, but 0.1 g. per kg. did not. At the above dosages, *G. palpalis* were killed when feeding during the period the calves were under treatment, and for 10–25 days after the final dose. The course of East Coast fever and trypanosomiasis was not affected by treatment with benzene hexachloride.

Nervous symptoms were the chief evidence of toxicity, and gross pathological changes were most obvious in the liver and the urinary system.

The D.D.T. employed contained 88% of the *pp'*-isomer. It was given orally in two animals at dosages of 0.5 g. per kg. and 0.25 g. per kg. respectively. No apparent symptoms of toxicity developed, and the insecticidal effects were negligible.—E. PARKER-POLLARD.

SPICER, S. S., SWEENEY, T. R., VON OETTINGEN, W. F., LILLIE, R. D., & NEAL, P. A. (1947.) **Toxicological observations on goats fed large doses of DDT.**—*Vet. Med.* 42. 289–293. 1750

D.D.T. in doses of 50 and 100 mg. per kg. body weight was fed to a lactating goat on five days per week, for 55 days. The concentration of D.D.T. in the milk varied from 1–5 mg. per g., and the D.D.T. was mainly dissolved in the cream.

In tests on five goats it was found that the toxic dose was 1,000 mg. of D.D.T. repeated 6–11 times, animals in fat condition being less susceptible. The clinical signs are described in detail, and are similar to those described in other animals, except that they take longer to develop.

The pathological changes are described, and the distribution of D.D.T. and its degradation product, D.D.A., in the various organs of one goat was determined. The interpretation of these findings is discussed.—A. G. SINGLETON.

ROSENBERG, M. M., & ADLER, H. E. (1950.) **Comparative toxicity of DDT and chlordan to young chicks.**—*Amer. J. vet. Res.* 11. 142–144. [Abst. from authors' summary.] 1751

DDT, chlordan ($C_{10}H_6Cl_8$) and lethane (50% N butyl carbital thiocyanate) were fed to week-old chicks. Whereas lethane was not toxic at the levels fed, DDT and chlordan were toxic. Chicks fed chlordan died earlier and in a shorter span than those fed DDT.

It was not possible in this investigation to differentiate, either by autopsy or histopathologic studies, between DDT and chlordan poisoning.

There were no definite pathologic changes ascribable to either insecticide. It is not likely that a correct diagnosis of poisoning by either DDT or chlordan can be made by gross or microscopic pathology without an adequate history.

This study was not designed to determine the efficiencies of various sprays; therefore, no recommendations can be made in regard to the amount of spray which may be used effectively without the appearance of toxic symptoms.

ARNOLD, A. (1949.) **Effect on dogs of flours treated with various improving agents.**—*Cereal Chem.* 26. pp. 46–51. [Abst. in *Nutr. Abstr. Rev.* 19. 168. (1949), copied *verbatim*. Signed: J. RIDLEY.] 1752

Young dogs were given, 6 days a week, 100 to 200 g. flour treated with $NaCl_3$, 5 g. per cwt., or with the following agents separately or in combination: ammonium persulphate 15 g., potassium bromate 5 g., chlorine 20 g., benzoyl peroxide 0.8 g., nitrosyl chloride 80 g. and chlorine dioxide 5 g. per cwt. Skimmed milk powder 20 g., maize oil 10 ml., $NaCl$ 2 g., liver concentrate 2 g., lean meat 15 g. and yeast 5 per cent. of flour weight were added to the flour.

Running fits occurred only in dogs given flour treated with $NaCl_3$.

SILVER, M. L., MONAHAN, E. P., KLEIN, J. R., & POLLOCK, G. H. (1949.) **Canine epilepsy caused by flour bleached with nitrogen trichloride ("agene").** 3. **Electroencephalographic analysis.**—*Arch. Neurol. Psychiat., Chicago.* 60. pp. 405–411. [Abst. in *Nutr. Abstr. Rev.* 19. 168. (1949), copied *verbatim*. Signed: E. M. HUME.] 1753

Dogs were given a diet of flour, liver, casein, salts sucrose, maize oil and vitamins, as already described [see *V. B.* 19. 620]. The flour had been bleached by the agene process with 80 g. nitrogen trichloride per 45 kg. flour, which was 10 times the commercial amount. The same diet with unbleached flour maintained dogs and monkeys in health. The bleached-flour diet caused change of character, ataxia, weakness and epileptic convulsions. The first signs of intoxication were apparent within 3 days of beginning the diet, and the development of the condition could be accelerated by injecting "bleached" amino-acids. Electroencephalograms were taken daily under ether anaesthesia. Within the first 3 days, they showed a cerebral dysrhythmia like that in human epilepsy. If the diet was continued the full syndrome quickly developed. Typical encephalograms are reproduced. The basic change in the brain waves was from the normal low-voltage fast potentials to the high-voltage slow activity that persists during the course of the disease. The whole pattern of the encephalo-

gram resembled that associated with human idiopathic epilepsy.

ZÁHUMENSKÝ, F. (1949.) Vliv alkalosy na hladinu oxalové kyseliny v krvi. [The influence of alkalosis on the amount of oxalic acid in the blood.]—*Čas. československ. Vet.* 4. 302-306. 1754

Z. discusses the occurrence of oxalic acid poisoning in domestic animals caused by the ingestion of plants containing oxalic acid or by endogenous production during streptococcal or staphylococcal infections. He used rabbits in groups of 14; one group was fed oats only, the second oats and sugar beet, in the third the oxalic acid level in the blood was reduced by treatment with 3% "polysan" and in the fourth they were given 5-8 ml. of a 25% glucose solution subcutaneously to induce acidosis.

The method for determining the oxalic acid in blood samples is given in detail; average results expressed in mg. % per 100 ml. blood being 1.98, 4.88, 1.46 and 72.7 respectively for the four groups.

A table is given comparing the amount of oxalic acid per 100 ml. blood in 14 normal rabbits with the amount in 14 rabbits after treatment with 3% "polysan", the lowering effect being expressed in mg. and percentage.—E. M. J.

ROBIN, V., & GUILHON, J. (1947.) La nocivité des potentilles dans les fourrages. [Toxicity of *Potentilla anserina* in fodder.]—*Rec. Méd. vét.* 123. 404-409. 1755

The death of three horses was ascribed to the ingestion of hay contaminated to the extent of 20-25% with *P. anserina*. The symptoms observed at the onset were, colic and passage of dry mucus-covered faeces, followed by intensification of the symptoms of colic, the total cessation of defaecation, frequent eructations with an ammoniacal odour, the nasal passage of small amounts of stomach contents, feeble pulse and cold sweating. The high tannin content of the plant is believed to be of significance.—H. PAVER.

ROBERTS, H. E., EVANS, E. T. R., & EVANS, W. C. (1949.) The production of "bracken staggers" in the horse, and its treatment of vitamin B₁ therapy. [Correspondence.]—*Vet. Rec.* 61. 549-550. 1756

"Bracken staggers," induced in a five-year-old mare, weighing 1,036 lb., by a diet of 50% bracken for 24 days and 75% for 18 days is stated to have been an almost uncomplicated picture of avitaminosis B₁.

Cure was effected in seven days by subcutaneous injection of aneurin (vitamin B₁, 100 mg. in 6 ml. water) twice on the first day and once daily subsequently.—NESTA DEAN.

See also abstr. 1834 (sodium fluoracetate poisoning in chickens).

O'MOORE, L. B. (1949.) The treatment with vitamin B₁ of bracken staggers in the bovine. [Correspondence.]—*Vet. Rec.* 61. 768. 1757

Two heifers were fed entirely on bracken (*Pteris aquilina*) for 69 days. Body temperatures became abnormally high on the 63rd day and from this time each animal was given two daily intramuscular injections of 200 mg. of vitamin B₁. The animals died a week later. Typical lesions of bracken poisoning were found on P.M. examination.—E. EDEN.

BERTHELON, M., LADRAT, J., & BOUICHOU, A. (1945.) Toxicité du blé carié pour les animaux. Recherches expérimentales. [The toxicity of mouldy corn for animals.]—*Rev. Méd. vét., Lyon et Toulouse.* 96. 52-59. 1758

Smut (*Tilletia tritici*) infected grain fed to two cows at the rate of 2.5-5 kg. per day for a period of three months caused no symptoms other than diarrhoea of a week's duration which cleared up spontaneously.

Three rabbits given 50-100 g. per day of the infected grain maintained health, appetite and weight gains. A cock fed 100 g. per day had less appetite and lost weight over a period of ten weeks, but symptoms of diarrhoea and impaired locomotion were absent.

Spores passed in the faeces were still viable except in those from the cock.—H. PAVER.

BRANDENBURG, T. O., & SHIGLEY, F. M. (1947.) "Water Bloom" as a cause of poisoning in livestock in North Dakota.—*J. Amer. vet. med. Ass.* 110. 384-385. 1759

Nervous symptoms developing in cattle 15-20 min after drinking lake water heavily contaminated with algae, followed by death 1-4 hours later, are described. In surviving affected cattle severe photosensitization with extensive skin sloughing was found. Identification of the algae was not achieved owing to decomposition of the sample.

—H. PAVER.

LOUW, P. G. J. (1948.) Lantadene A, the active principle of *Lantana camara* L. Part II.—Isolation of Lantadene B, and the oxygen functions of Lantadene A and Lantadene B.—*Onderstepoort J. vet. Sci.* 23. 233-238. 1760

The active principle of *Lantana camara* has been renamed Lantadene A instead of lantinin, the name previously given by the same author [see *Onderstepoort J. vet. sci.* 18. 197-202]. The substance is probably a polyterpene derivative and gives a typical picture of acute photosensitization and severe icterus in sheep with a dosage of 2 g.

A cogener of Lantadene A has been isolated, named Lantadene B, and found to be inactive. The functions of the oxygen atoms in Lantadene A and B are discussed.—H. PAVER.

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections, see under the appropriate disease)

LONDON, I. M. (1949.) **The use of stable isotopes in biological and medical research.**—*J. clin. Invest.* 28. 1255-1270. [Author's conclusion copied *verbatim*.] 1761

Despite the relatively short period of time during which isotopes have been available, tracer techniques have exerted a pervasive influence on biochemical thought and practice. A definitive evaluation of this influence may have to await more extensive development of isotope investigation. It is possible, however, to indicate the two principal developments in biochemical thought which have already occurred and are due in part to the impact of tracer techniques.

Tracer studies have helped to develop a concept which provides insight into the mechanisms of biological synthesis. It has become evident that complex organic substances to a large extent are synthesized not from compounds of similar complex configuration but rather from small compounds of simple structure. The extensive participation of glycine and acetic acid in biosynthetic processes has focussed attention on the biochemical versatility and significance of small simple compounds.

The outstanding contribution of isotope methodology to biochemical thinking has been the development of the concept of the dynamic state of the body constituents. The experimental basis and theoretical implications of this concept, which includes an appreciation of the kinetics of biochemical reactions, represent a major advance toward a thorough understanding of the processes which occur in the living cell.

YOUNG, I. M. (1949.) **Abdominal relaxation with decamethonium iodide (C10) during caesarean section.**—*Lancet.* 256. 1052. [Author's conclusions copied *verbatim*.] 1762

C10 blocks neuromuscular transmission in the viable foetus of the rabbit and of the guinea-pig and in isolated diaphragm-phrenic-nerve preparations from these and from human foetuses 18-22 weeks old.

In rabbits and guineapigs the placenta forms a very effective barrier to the passage of C10 from the maternal to the foetal circulation; it does not cross even when present in the maternal bloodstream in concentrations 50-100 times the paralyzing dose.

In rabbits and guineapigs C10 is not transferred from the foetal to the maternal circulation.

SMADAL, J. E. (1950.) **Clinical use of the antibiotic chloramphenicol (chloromycetin^(a)).**—*J. Amer. med. Ass.* 142. 815-817. [Author's summary copied *verbatim*.] 1763

Chloramphenicol (chloromycetin^(a)) has now been shown to be of definite value in the treatment of patients with rickettsial diseases, typhoid and brucellosis. It holds promise, on the basis of laboratory studies, of being of value in controlling other infections of man. Chloramphenicol is of low toxicity for human beings.

TAYLER, R. C. (1950.) **Some applications of vitamin A therapy in mixed practice.**—*Vet. Rec.* 62. 32-33. 1764

T. claims that several skin diseases and other diseases in horses, cattle and dogs have been successfully treated with vitamin A. [From this short report it is difficult to assess whether the animals actually had a vitamin A deficiency and whether the vitamin A was in itself the curative agent.]—E. EDEN.

FORTIER, C., SKELTON, F. R., CONSTANTINIDES, P., TIMIRAS, P. S., HERLANT, M., & SELYE, H. (1950.) **A comparative study of some of the chemical and morphological changes elicited in the adrenals by stress and purified ACTH.**—*Endocrinology.* 46. 21-29. [Authors' summary and conclusions copied *verbatim*.] 1765

The effects on the adrenal cortex of single and repeated injections of ACTH [adrenocorticotrophin—Ed. V. B.] were investigated and compared with the changes observed after exposure to acute systemic stress (cold, fasting, spinal-cord transection). A single injection of ACTH produced a rapid but very transient fall of adrenal stainable lipids. No such decrease was observed after 24 and 48 hours of repeated injections despite a marked depletion of the cholesterol and ascorbic acid content. This is in distinct contrast to the pictures observed after systemic stress of the same duration where all the above adrenal constituents decreased proportionately. It is concluded that ACTH alone can not account for the adrenal response during the alarm reaction.

HALLBERG, L. (1950.) **Effects of deoxycortone and methylene-blue in rheumatoid arthritis. An attempt to explain the action of ascorbic acid on deoxycortone.**—*Lancet.* 253. 351-352. [Author's summary copied *verbatim*.] 1766

If the same substance is formed when deoxycortone and methylene-blue are injected as when deoxycortone and ascorbic acid are injected, as the results suggest, this substance is an oxidation product of deoxycortone, methylene-blue being an oxidising agent. In most cases the injection of methylene-blue alone or ascorbic acid alone had a slight beneficial effect. This can be explained by the oxidation of steroids present in the body into active substances. The fact that the full

beneficial effect is reached only if deoxycortone is given together with methylene-blue or with ascorbic acid proves that the active substance formed by the combined treatment originates chiefly from the deoxycortone. These experiments suggest that the physiological rôle of ascorbic acid in the suprarenal glands is that of oxidising the steroids present into various active adrenal hormones.

HOWELL, T. H. (1950.) **Relief of pain in rheumatoid arthritis with tetraethylammonium bromide.**—*Lancet*. 258. 204–205. [Author's summary copied *verbatim*.] 1767

T.E.A.B. has been given by intramuscular injection to patients with painful exacerbations of rheumatoid arthritis on 55 occasions. On 10 occasions there was no relief of pain, and this happened most often when the pain was associated with peri-articular soft-tissue lesions. On 45 occasions there was partial or complete relief of pain, usually within an hour, lasting 5–210 days in different patients.

See also *absts.* 1542–1543 (mastitis); 1546 (pneumococci susceptible and resistant to drugs); 1554 (g. pig TB.); 1555 and 1559 (PAS); 1566 (promacitin in leprosy); 1567 (bovine pyelo-nephritis); 1568 (serum therapy in swine erysipelas); 1576 (rabbit listerellosis); 1593 (fungal nail infections); 1597 (bacteria and penicillin); 1603 (in experimental *T. equiperdum* infection in rats); 1604 (dourine); 1605 (bovine trypanosomiasis); 1607 (anticyde); 1612–1613 (bovine theileriasis); 1639 (bovine malignant catarrh); 1646 (therapeutic use of fowl plague vaccine); 1672 (mange in horses); 1673 (mange in cattle); 1675 (demodectic mange); 1680 (liver fluke); 1690 (equine strongylosis); 1722 (periodic ophthalmia); 1736 (D.D.T. and X disease); 1749 (oral doses of D.D.T. in cattle against arthropods); 1750 and 1751 (D.D.T.); 1756 and 1757 (vitamin therapy in bracken staggers); 1807 (protargol and collargol); 1836 (book, penicillin, streptomycin).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

HERLANT, M. (1949.) **Study of the pituitary body with the periodic acid-Schiff reaction.** [Correspondence.]—*Nature, Lond.* 164. 703–704. 1769

Application of the periodic acid-Schiff reagent to the study of the human pituitary has confirmed the muco-protein nature of the cyanophile granules and enables distinction to be made between them and the colloid droplets.—C. W. O.

LUNN, H. F. (1948.) **Observations on the mammalian inguinal region.**—*Proc. zool. Soc. Lond.* 118. 845–855. [Author's summary and conclusions copied *verbatim*.] 1770

The form and attachments of the mammalian abdominal muscles are determined not by the descent of the testis, but by muscles, vessels and nerves which interrupt their continuity as they pass into the lower limb.

Man differs from the other mammals in the great size of his lower limb and in walking truly erect. He has consequently a wide interruption in the abdominal muscles caused by his large ilio-psoas and neuro-vascular bundle. As both the spermatic cord and the femoral vessels pass through the same basic interval in the parietal musculature, there is no justification for the separation of the inguinal from the femoral region in current descriptions of these parts in man.

SCHILLING, R. S. F., ROBERTS, M., & GOODMAN, N. (1950.) **Clinical trial of occlusive plastic dressings.**—*Lancet*. 258. 298–296. [Authors' summary copied *verbatim*.] 1768

A controlled clinical trial of the treatment of minor industrial wounds with a nylon-derivative dressing is described. The healing-time of wounds so treated was significantly shortened by comparison with similar wounds treated with a waterproof wound dressing commonly used in industry. The nylon dressing maintained its seal more satisfactorily, particularly when a film of synthetic rubber solution was applied to the edges of the dressing. It was generally preferred by the patients because of the quicker healing and good condition of the underlying skin. The transparency of the film has great clinical value. The saving of production time by using a dressing which promotes quicker healing and allows a rapid inspection without a re-dressing is considerable.

The security of the mammalian inguinal region against herniation of the viscera depends primarily upon the neuro-muscular reflex mechanism of the lower abdominal wall, rather than on the resistance of the inguinal rings. There is a secondary obliteration of the neck of the processus vaginalis in some forms subject to exceptionally high abdominal pressure due to their mode of progression, whether jumping, climbing or walking erect.

There is no evidence in the animals dissected that the connective tissue or fascia external to the peritoneum plays a significant part in maintaining the security of the groin. In all forms examined, ligamentous tissue has been found to span the hilum of the hind limb and to be homologous with the inguinal ligament of man.

The reason for testicular descent remains obscure—there is no apparent biological advantage gained by those animals in which descent occurs. The degree to which the testes descend bears no relation to the position of the animal in an evolutionary series.

PERRY, W. F., & GEMMELL, J. P. (1949.) **The effect of surgical operations on the excretion of iodine, corticosteroids, and uric acid.**—*Canad. J. Res. Sect. E*. 27. 320–326. [Authors' abst. copied *verbatim*.] 1771

The effect of surgical operations on the urinary excretion of iodine, corticosteroids, uric acid, and ketosteroids was examined in 11 subjects. The majority showed a marked rise in the excretion of iodine which occurred within the first 24 hr. after operation; thereafter iodine excretion tended to decline, being back to normal levels by the third postoperative day. Over the same period of time the excretion of corticosteroids increased and was still elevated on the third postoperative day. The excretion of uric acid was elevated in some but not all of the subjects while no consistent trend in any direction was noted as regards the excretion of ketosteroids. The level of inorganic plasma iodine was elevated one to two hours postoperatively, while the level of protein bound plasma iodine was unchanged. No conclusion was reached concerning either the source of the extra iodine or the relationship between the increased excretion of iodine and the increased excretion of corticosteroids.

FERGUSON, K. A., CARTER, H. B., & HARDY, M. H. (1949.) **Studies of comparative fleece growth in sheep. I. The quantitative nature of inherent differences in wool-growth rate.**—*Aust. J. sci. Res. Ser. B.* 2. 42–81. 1772

This experiment was designed primarily to examine the relation between wool-growth rate, the plane of nutrition and wool-producing capacity in two breeds of sheep, the Camden Park Merino and the Corriedale. Since this relationship seemed likely to follow the familiar law of diminishing returns a suitable equation was proposed and its validity tested in terms of the experimental data obtained under a carefully managed nutritional régime.

In data from those groups maintained at a uniform plane of nutrition evidence was found that the environmental air temperature had a significant positive effect on wool-growth rate. Increases of 0.048 g. and 0.082 g. per sheep per day per °F. rise in temperature were observed in the Camden Park Merinos and Corriedales respectively. A further significant but inverse association was revealed in the same groups between fibre thickness and the amount of fleece carried by the sheep. This phenomenon was ascribed to the effect of fleece covering on the moisture content of the skin, producing an increased tissue hydrostatic pressure which compressed the follicles so producing longer thinner fibres but no change in weight of wool per unit time. Considerations of tissue hydrostatic pressure were also invoked to explain why the effect of temperature on wool growth rate was almost wholly brought about by length-growth rate alone in contrast to the plane of nutrition which affected both fibre thickness and length.

It was concluded that although the inherent wool-producing capacity of a sheep is difficult to assess, except under laboratory conditions, due weight must be given to the relationships such as those expressed by the equation used in this experiment, *viz*: $y/A = 1 - e^{-k'(x-x_0)}/A$ where y = wool growth rate, x = nutrient intake at or above maintenance, x_0 = nutrient intake for which $y = 0$, A = the asymptotic value of y and k' = a constant depending on the nutritive qualities of the diet employed. The theoretical limit of wool growth rate, in terms of the equation proposed, was found to be 5.3 g. and 21.9 g. per day for the Camden Park Merinos and Corriedales respectively.

The experiment also emphasized the need for integrating studies on the physiology of heat regulation in the sheep, especially the role of the skin, with nutritional research on fleece growth.

WINCHESTER, C. F., COMAR, C. L., & DAVIS, G. K. (1949.) **Thyroid destruction by I^{131} , and replacement therapy.**—*Science.* 110. 302–305. 1773

In order to throw more light on the relationship between thyroid function and egg production, a method of thyroid destruction in chicks in the first few days of life by means of radio-active iodine was developed. The procedure has been termed radio-thyroid-ecrexis. It was found that doses of about 6 mc. (millicuries) activity per 100 g. body weight of I^{131} injected peritoneally over periods up to 24 days were sufficient to bring about complete destruction of the thyroid. The injected chicks grew very slowly and died within 7–18 weeks. Replacement therapy with thyroxin induced the resumption of growth, feather development and the development of the reproductive organs even to the stage of egg-laying.

—J. A. NICHOLSON.

BACQ, Z. M. (1949.) **The metabolism of adrenalin.**—*J. Pharmacol.* 95. 1–26. 1774

B. gave an account of the more recent work on the metabolism of adrenalin, particularly with regard to the possible modes of its inactivation in the body. Injected adrenalin leaves the circulation and accumulates in the cells where it remains active for about ten hours. The amount so stored is regulated by the nervous system whereas thyroxin regulates the sensitivity of the tissues to its action. Adrenalin is not normally excreted unchanged by the kidneys, but is inactivated in the liver and intestines. This is brought about by the presence of amine-oxidase which induces de-amination of the side chain. The presence of this enzyme in other tissues has not been confirmed so that other ways of inactivation must be considered. It may be that esterification of the

phenolic groups takes place or perhaps oxidation to quinone. Noradrenalin is probably the precursor of adrenalin and not a degradation product and the source of the methyl groups attached to the nitrogen in the adrenalin molecule is most probably methionine.—J. A. NICHOLSON.

MILHAUD, G. (1949.) Fractions protidiques et formol-gélification. [Protein fractions and formol gel-formation.]—*Ann. Inst. Pasteur.* 77. 170-179. 1775

The only proteins which enter into the formol-gel reaction of serum are the γ -globulins and the fibrinogens, the latter being effective at lower concentrations than the former.

The reaction is accelerated by heating to 40°C., and is not inhibited by albumins.—N. D.

WRENSHALL, G. A., COLLINS-WILLIAMS, J., & BEST, C. H. (1950.) Initial changes in the blood sugar of the fasted anesthetized dog after alloxan.—*Amer. J. Physiol.* 160. 228-246. [Authors' summary and conclusions copied verbatim.] 1776

The effects of anesthetic, diet and insulin on the initial blood sugar changes in normal adult female dogs following administration of alloxan preparations have been studied. Lack of uniformity in the properties and effects of different alloxan preparations has been described. The existence of an initial phase of hypoglycemia after alloxan administration in the normal dog has been confirmed and the relationship of this effect to diet and insulin has been investigated. The existence of an intermediate phase of hypoglycemia appearing under certain circumstances in the recently depancreatized dog has been confirmed.

Reasons are presented which suggest that the corresponding phase of alloxan hypoglycemia in the normal dog is of more complex origin than that observed in the depancreatized animal. Indirect evidence suggests that in the former the action of insulin may be involved but this point is not established. A significant degree of positive linear correlation has been observed between the insulin per gram of pancreas, estimated by bioassay in the pancreas of alloxan-treated dogs and an histological index of beta-cell granulation.

GOODWIN, T. W., & WILSON, A. A. (1949.) Studies in vitamin A. 14. The alleged mobilization of vitamin A by adrenaline.—*Biochem. J.* 45. 370-372. 1777

Adrenalin diluted 1:1,000 was injected intraperitoneally into rats and intravenously into rabbits. Vitamin A determinations were made on the blood before injection and at intervals from 10-120 min. afterwards. No significant rise

in the vitamin A level of whole blood or plasma was observed in either species.—E. EDEN.

LEVEY, S. (1949.) Effect of ascorbic acid, D-isoascorbic acid and glucoascorbic acid on cobalt polycythemia in the rat and rabbit.—*Amer. J. Physiol.* 158. 315-318. 1778

Polycythemia was produced in rats and rabbits by subcutaneous daily injections of cobalt chloride, the injections being continued during administration of either ascorbic, iso-ascorbic or glucoascorbic acid. No significant fall in haemoglobin of the rats was found following the administration of any of the compounds. In the rabbits there was a fall following the intravenous injection of the sodium salt of ascorbic acid, a fall in some animals given the sodium salt of D-isoascorbic acid by the same route and no fall with glucoascorbic acid.—P. H. HERBERT.

LEVEY, S. (1950.) Cobalt polycythemia and cytochrome C.—*Science.* 111. 18. 1779

Polycythemia was produced in 15 rats by intraperitoneal injection of 0.5 mg. of cobalt per day. When the level of haemoglobin became constant, eight of these rats received intravenously 7.5 mg. of cytochrome C dissolved in physiological saline, but this did not reduce the haemoglobin of the animals to normal levels.—E. EDEN.

GROSSMAN, J. D. (1949.) Form, development, and topography of the stomach of the ox.—*J. Amer. vet. med. Ass.* 114. 416-418. 1780

G. reviewed the topography of the stomach in the calf and adult ox and pointed out that not until six months of age do the various compartments assume proportions approaching those of the adult animal, a state which will not be reached before the average age of one and a half years. Two cross sectional drawings: one of a new-born calf at the level of the tenth thoracic vertebra illustrating the size of the abomasum, and one of an adult cow sectioned at the level of the ninth rib demonstrating portions of all four compartments and a typical view of the omasal groove which continues the oesophageal groove, form useful additions to the series now exhibited in the new edition of Sisson edited by the writer.

—C. W. OTTAWAY.

CHRISTENSEN, B. G., & JACOBSEN, E. (1949.) Studies on liver regeneration.—*Acta med. scand. Suppl.* No. 234. pp. 103-108. [In English. Authors' summary modified.] 1781

The regeneration of liver tissue after partial hepatectomy was studied by observation of mitoses on the remnant. Hypophysectomy and thyroidectomy did not impair the rate of regeneration. Treatment with normal liver tissue did not impair the rate of regeneration. In experiments using parabiosis, where one of the pair was partly

hepatectomized, a certain number of mitoses were seen in the liver of the individual not hepatectomized. This gives some indication of the production of cell-stimulating substances in the liver remnant after the operation.

TAYEB, M. A. F. (1948.) Urinary system of the camel.—*J. Amer. vet. med. Ass.* 113. 568-572. 1782

The topography of the urinary system of the camel was examined in 50 male and female camels, in two cases from injected specimens, in the remainder in their normal position prior to removal and fixation. Mean weights and measurements are given for the most important organs. In general the topography was found to be typical of the ruminant, but the following peculiarities were noted. The kidneys are non-lobulated with simple renal crests, but prolongations of the renal pelvis extend into the medulla. The capsule is very thick and it is suggested this property helps to fix the organ, preventing displacement when the rumen distends. The position and shape of the adrenal glands are dependent upon their accommodation between the liver, diaphragm, kidney and great vessels, presenting a more elongated left and more discoid right gland than those in other ruminants.—C. W. OTTAWAY.

MILLS, H. D. (1949.) Speculations concerning the significance of the choledcho-duodenal junction in the horse, and its relationship to the absence of a gall bladder.—*Vet. Rec.* 61. 418-421. 1783

Absence of the gall bladder in the horse focuses attention on the choledcho-duodenal junction, and M. examined this in many specimens. The bile duct is of wide diameter until it reaches the duodenal wall, where it narrows considerably to open in common with the pancreatic duct in a circumscribed crater, the ampulla of Vater. The course of the main pancreatic duct is characteristic in that its intra-mural portion crosses the line of the bile duct. Neither duct terminates in a sphincter, but their orifice is guarded by a papilla or valve-like fold. These findings are compared with those in man and the conclusion is reached that the absence of a gall bladder in the horse obviates the necessity of a sphincter mechanism to control the flow of bile into the duodenum. Egress of ingesta from the duodenum into the duct is prevented by the valve, and the peculiar nature

of the bile and pancreatic ducts prevents biliary reflux into the pancreatic system and *vice versa*.

The physiological significance and possible clinical application of these findings are discussed.—C. W. OTTAWAY.

STAMP, J. T. (1948.) The distribution of the bronchial tree in the bovine lung.—*J. Comp. Path.* 58. 1-8. 1784

With a view to assisting explanation of the localization and subsequent distribution of tuberculous lesions, S. presents an account of the distribution of the bronchial tree in the bovine lung. Sixty lungs were examined.

Following a brief review of the possible origin of the eparterial bronchus in the mammalian lung, the main tracheal sub-divisions in the bovine animal are considered. To avoid confusion in nomenclature, the divisions of these bronchi are related to their lobe distribution and the further divisions of lobar bronchi to the particular area of the lobe supplied. These areas are designated as broncho-pulmonary segments, and in the drawings which accompany the text, each of the bronchi is nominated by the same letter as its pulmonary segment. The drawings are arranged in pairs for each lung, one viewed dorso-laterally the other ventro-medially, and a third dimensional appreciation can be considered in a manner not presented by reference to anatomical text books. [Inclusion, in the drawing, of the intermediate lobe of the right lung would have completed the picture.]

—C. W. OTTAWAY.

DAVIDSON, J. N., & LESLIE, I. (1950.) A new approach in the biochemistry of growth and development.—*Nature, Lond.* 165. 49-53. 1785

As deoxyribonucleic acid phosphorus (DNAP) is constant in the nuclei of somatic cells, the authors advocate the plotting of the log of the chemical entity of the cell measured against the log of DNAP. This will help to decide whether the two compounds are metabolically related in the same way in various tissues during growth. When this is done for heart and brain of chick embryo a striking correspondence can be seen between the growth ratios of protein nitrogen, phospholipoid phosphorus and ribonucleic acid phosphorus in both organs, although the metabolic pathways in the brain run a quite different course from those in the growing heart in the stages of development studied.—E. EDEN.

See also absts. 1548 (size of submaxillary lymph nodes in cattle); 1587 (action of lysozyme micro-organisms); 1701-1703 (colostrum); 1706 and 1707 (growth of fleece); 1712 (copper deficiency); 1717 (teeth); 1726 (liver lesions and metabolism).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

ASCHAFFENBURG, R. (1947.) A simple turbidity test for sterilized milk.—*Mon. Bull. Minist. Hlth publ. Hlth Lab. Serv.* 6. 159-161. 1786

Provided that the soluble proteins of milk have been denatured, and this would be the case in boiled milk, the production of a clear filtrate

of milk would be an indication that it had been boiled and this is the test now advocated, details of which are given.—D. S. RABAGLIATI.

CARTER, R. H., WELLS, R. W., RADELEFF, R. D., SMITH, C. L., HUBANKS, P. E., & MANN, H. D. (1949.) **The chlorinated hydrocarbon content of milk from cattle sprayed for control of horn flies.**—*J. econ. Ent.* 42. 116-118. 1787

The amounts of chlorinated hydrocarbons recovered from the milk of cows sprayed at the rate of 2.2 quarts per animal of 0.5% concentration of the following averaged only 0.2 (chlordane), 0.5 (dichlorodiphenyl dichlorethane), and 0.1 (toxaphene) p.p.m. respectively, these amounts being regarded as of negligible importance.

—M. J. LETHBRIDGE.

LAZZARO, D. A. (1948.) **Reses ictericas. [Detection of jaundice in animal carcasses.]**—*Gac. vet., B. Aires.* 10. 242-265. 1788

L. describes the use of Van den Bergh and other tests for the detection of jaundice in animal carcasses, and its differentiation from mere yellow staining of the body fat. Two tests have been adapted for the rapid detection of bile pigments in bovine, ovine and porcine fat.

A limited search for bacteria in jaundiced carcasses revealed enterococci, pasteurilla, *Bact. coli* and a diplococcus in various tissues. While these are not necessarily concerned in the aetiology of jaundice, L. considers that they readily invade the slightly damaged tissues of jaundiced animals and make the meat unsuitable for human consumption.—I. W. JENNINGS.

EGEHOJ J. (1949.) **Fordærvælsens graduering i parenkymatøse organer. [Estimation of extent of putrefaction in parenchymatous organs.]**—*Nord. Vet.-Med.* 1. 163-168. [Abst. from English summary.] 1789

On the basis of macroscopic changes, biochemical findings, and bacterial counts for unit weight of tissue it is practicable to divide putrefaction of parenchymatous organs into three stages.

In the first stage there are no changes visible to the naked eye, the NH_3 and H_2S tests are negative, and the maximal bacterial count per g. of tissue is 40,000; when stored at 18-24°C., such organs will keep for at least 16 hours.

The second stage is characterized by commencing macroscopic putrefactive changes which are not yet so far advanced as to justify the designation "putrid". The H_2S reaction yields a doubtful result and there is a bacterial count of between about 50,000 and 500,000 per g. of tissue. The tissue will not keep for more than seven hours at 18-24°C. Such organs should be passed for consumption only if they are used for prepa-

tion of a finished product that requires such intensive heating that the bacteria present are killed.

In the third stage there are typical putrefactive changes in the form of offensive smell and advanced destruction of the parenchyma, the NH_3 and H_2S reactions are positive, and there is a bacterial count of about one million or more per g. of tissue.

PRITCHETT, H. D. (1948.) **Detention of fresh dressed poultry under refrigeration pending condemnation proceedings.**—*Canad. J. comp. Med.* 12. 72-74. 1790

The quick freezing of fresh dressed iced poultry in the original containers is a common procedure within the wholesale trade. Two methods are employed in quick freezing:—dry pack, and wet pack, the latter so named because ice is used abundantly throughout the container. This poultry is sold either in the original container without thawing or placed in water for thawing. Severe criticism is voiced against the latter method which should be outlawed.

The author states that, contrary to the opinion of some, freezing of fresh dressed poultry can be done with only slight degrading of the carcass. The method should be used where poultry must be held pending examination for salvage or destruction. He believes there is need for much improvement in the systems of poultry inspection.

—J. W. PULLIN.

ZEMAN, W. (1949.) **Eine Paratyphus-C-Gastroenteritis durch den Genuss von Trockeneipulver. [A Salmonella outbreak attributed to dried egg powder.]**—*Dtsch. med. Wschr.* 74. 121-122. [Abst. in *Bull. Hyg., Lond.* 24. 795. (1949), copied *verbatim*. Signed: W. G. SAVAGE.] 1791

The outbreak occurred in January 1947 in a prisoner-of-war hospital in Germany, and about 45 persons suffered from symptoms of gastroenteritis after eating scrambled eggs prepared from an American dried egg powder; all recovered.

The powder, after being mixed with water, was allowed to stand for about 14 hours at room temperature before the scrambled eggs were prepared. A portion of scrambled egg which had stood for about 6 hours at 20°C. in a hospital ward caused five severe cases of gastro-enteritis. Another patient who had only a spoonful was ill for one day only, and those who did not have scrambled egg remained well. From four of these severe cases Group C type *Salmonella tennessee* was isolated from the stools. Three patients continued to excrete this organism in the stools for three months. The same organism was isolated

from stools of a patient who had not been ill. A positive agglutination of 1 : 400 was recorded, but cultures from blood, duodenum and gall bladder were negative. Bacteriological examinations of the original egg powder showed no *Salmonella*. The author states that this was the first outbreak recorded in Germany due to dried egg powder.

STAPERT, H. H. C. (1949.) Kaasvergiftiging. [Food poisoning by cheese.]—*Tijdschr. v. Sociale Geneesk.* 27. 112-118. [Abst. in *Bull. Hyg., Lond.* 24. 794-795. (1949), copied *verbatim*. Signed: A. L. WINNER.] 1792

An epidemic is described, occurring in Roermond, Holland, of poisoning by cheese: 21 persons were affected, coming from 8 families with a total of 39 members. Of those affected, 11 were sufficiently ill to be admitted to hospital. The main symptom was gastro-enteritis and the common article of food was soon established as cheese.

It was noted that the symptoms and course of the illness were exactly like those of food poisoning due to staphylococcal enterotoxin. Cheese poisoning is a well-recognized condition and the only organisms ever recovered from the infected foodstuff are coliform bacteria. It is suggested, however, that staphylococci may be implicated and a theory is put forward that they gain entry to the cheese during manufacture, when conditions for multiplication are favourable. For toxin production a concentration of 25 per cent. CO₂ is required and this can occur in cheese only in the presence of coliforms which in these cases are always found. After manufacture, oxygen is lacking within the cheese and the staphylococci

See also absts. 1540 (staphylococci in foods); 1550 (origin of tubercle bacilli in milk); 1814 (milking technique); 1853 (book, food research); 1854 (book, bacterial count in milk).

LIVESTOCK HYGIENE

ANON. (1949.) Present status of air disinfection. —*Bull. U.S. Army med. Dep.* 9. 541-551. 1795

The routine use of air disinfection methods in barracks is not at present justified.

Propylene glycol is less convenient than triethylene glycol. Continuous vaporization of the latter is necessary to maintain an effective concentration of 50 % saturation. It must be evaporated below 260°F. Many marketed vaporizers are inadequate. An unpleasant fog may be produced if saturation exceeds 100 %, but prolonged exposure at 100 % saturation was found to be non-toxic, and there is no explosion hazard. Efficiency is optimal when the relative humidity lies between 20 and 50.

Dust suppression is an important auxiliary measure in disinfection with glycols and with ultra-violet irradiation, which are ineffective against the bacteria or large dust particles. The

would die out under such anaerobic conditions. Cheese is never consumed until it is six weeks old.

To check this hypothesis a visit was paid to the farm where the particular cheeses under suspicion had been made. It was found that the farmer, immediately after the date on which these cheeses were made, had had to give up milking on account of a severe septic infection of the right thumb, but on the relevant date had done the milking, though in great pain. Circumstantial evidence thus seems to favour the theory that in this case poisoning by cheese was due to staphylococcal enterotoxin.

WILSON, G. A., & CHITTO, B. (1946.) Vermin destroyer.—U.S. Patent 2,440,214, Appln. Jan. 5, 1946. Issd. April 20, 1948. [Abst. in *Biol. Abstr.* Sect. F. 22. p. 26. (1948), copied *verbatim*. R. K. DURHAM.] 1793

A trough-shaped bait container open at both ends is provided with a pair of spaced, parallel electrodes, extending across each end in such a position that they bar entry of the rats, mice, etc., into the bait container and electrocute them as they contact the electrodes in seeking to enter.

ANON. (1947.) Sodium monofluoroacetate as a rodenticide.—*Bull. U.S. Army med. Dep.* 7. 747-750. 1794

A description of the use of sodium monofluoroacetate (compound 1080) as a rodent poison and of toxic effects on human beings. Cats and dogs are stated to be highly susceptible and are killed as readily by freshly poisoned rodents or dried carcasses as by eating bait or by drinking poisoned water.—H. PAVER.

oiling of blankets was shown to bring about a 95 % decrease in the number of bacteria in the air during bedmaking. The effect of a single application endures throughout the life of a blanket.

—NESTA DEAN.

VIZIROV, B. N., & MALININ, K. M. (1944.) [The cattle drive through Moscow province in 1943.]—*Veterinariya, Moscow.* 21. No. 5-6. p. 10. 1796

Following the withdrawal of the German armies, 140,000 cattle, sheep and goats were driven from east to west through the Moscow province during the period July-October 1948. Seven routes were chosen, divided altogether into 21 sections, each in charge of a superintendent. An eighth route was kept in reserve in case of an epidemic outbreak. The details of each route and the points of rest, watering and feeding were carefully worked out by local veterinarians, cattle

inspectors and instructors in animal husbandry, under senior veterinarians.

The sanitary side of the drive received attention:—all veterinary centres along and near the routes were stocked with drugs and, where necessary, new depots established; in addition,

at a number of points all animals as they came through were examined by veterinarians. Periodic reports were submitted as to the progress of each herd. During the period of the drive all local cattle along the routes were examined twice a month. No serious incidents occurred anywhere.—F. A. A.

REPRODUCTION AND REPRODUCTIVE DISORDERS

CULLITY, M. (1949.) **Artificial insemination and its possibilities for herd improvement in Western Australia.**—*J. Dep. Agric. W. Aust.* 26. 89–98. 1797

This is a review of the development and present application of artificial insemination in dairy cattle in various parts of the world. The desirability and the difficulties of establishing a system of artificial insemination in Western Australia are considered, and suggestions are made on the way in which such a system may be developed. It is proposed that a few bulls of outstanding quality be selected on the basis of progeny tests, and that with these a "pilot" centre be established for exploratory work and for the training of technicians. The service could then be extended to selected herds where owners were prepared to co-operate. Later, distributing centres could be established at more distant points, these centres being equipped with refrigeration, washing and sterilizing facilities. The distributing centres would operate in a manner similar to a main centre except that bulls would not be kept there, and diluted semen would be supplied from a main centre.—C. R. AUSTIN.

BAYLEY, N. D., COBBS, H. V., & BARRETT, G. R. (1950.) **A synthetic pabulum vs. yolk-citrate buffer as a diluter of bull semen.**—*J. Dairy Sci.* 33. 24–27. [Authors' summary copied verbatim.] 1798

In a trial involving 1,284 field inseminations, the fertility was 15 per cent higher with semen of 19 bulls diluted with egg-yolk citrate buffer than with other portions of the same semen diluted with a synthetic pabulum. The real difference may be considered as lying within the range 7 to 23 per cent.

ROTHSCHILD. (1949.) **Electrical measurement of bull sperm activity. The effect of small electric currents on fertilizing capacity.**—*J. agric. Sci.* 39. 294–295. [Author's summary copied verbatim.] 1799

The activity of spermatozoa in bull semen can be assessed by measuring the frequency of impedance changes in the semen. Such measurements necessitate the passage of a small electric current through the semen. The field experiment described in this paper shows that this electrical treatment is harmless. Measurements can there-

fore be made on samples of semen which subsequently will be used in artificial insemination.

ALMQUIST, J. O., GLANTZ, P. J., & THORP, W. T. S. (1948.) **The effect of streptomycin upon the livability and bacterial content of bovine semen.**—*J. Dairy Sci.* 31. 501–507. 1800

Streptomycin in varying concentrations was added to samples of bull semen diluted 1:24 with egg yolk citrate. The samples were stored at 4.5°C. and percentages of motile spermatozoa determined every two days for 20 days. Concentrations up to 1,000 units per ml. had no significant effect on spermatozoan viability whereas higher concentrations produced a significant decrease. Bacterial plate counts were made after 0, 8 and 16 days of storage. All levels of streptomycin above 100 units per ml. inhibited growth in freshly diluted semen and all levels retarded growth during eight days' storage. After 16 days' storage plate counts were erratic, although the average count of treated specimens was less than that of controls. In streptomycin assays there was no loss during the storage period.—E. J. H. F.

FOOTE, R. H., & SALISBURY, G. W. (1948.) **The effect of pyridium, penicillin, furacin, and phenoxethol upon the livability of spermatozoa and upon the control of bacteria in diluted bull semen.**—*J. Dairy Sci.* 31. 763–768. 1801

The compounds were added in various dilutions to semen and the mixture was stored at various temperatures for varying periods. Bacterial plate counts were made and percentages of motile spermatozoa and rate of motility were determined. Furacin (nitrofurazone) and phenoxethol (ethylene glycol monophenyl ether) were both bactericidal and spermaticidal. Pyridium (an azo dye) at its maximum solubility was neither bactericidal nor spermaticidal. Two commercial samples of penicillin at concentrations up to 800 units per ml. controlled bacterial growth, but one of them was toxic to spermatozoa and the authors suggest this might be a source of trouble were penicillin to be used widely for this purpose.—E. J. H. F.

HAQ, I., & MULLEN, J. E. C. (1949.) **Phosphomonoesterases in bull semen.**—*Vet. Rec.* 61. 145–150. 1802

Acid and alkaline phosphatase values were estimated in 53 ejaculates from 15 fertile bulls,

37 ejaculates from 11 bulls with testicular degeneration and 13 ejaculates from three bulls with testicular hypoplasia.

The values in each of the three groups covered a wide range, although in general the mean values in hypoplasia and degeneration were below those of fertile bulls. There was a significant correlation between phosphatase value and spermatozoa density or percentage of abnormal spermatozoa but not between phosphatase value and spermatozoa volume or motility. The possible source of phosphatase is discussed.—E. J. H. F.

BARRON, N. S., & HAQ, I. (1948.) **Ammonium urate in the semen of bulls with testicular hypoplasia.**—*Vet. Rec.* 60. 155-156. 1803

Two infertile Shorthorn bulls aged 18 and 24 months gave on two occasions several ejaculates containing a whitish deposit of ammonium urate. The semen samples had spermatozoa of poor motility in low concentration, and testicular hypoplasia was marked although both bulls served actively. Hypoplasia of both testicular epithelium and epididymis was confirmed on histological examination, and there was vacuolation of the epithelium of the tail of the left epididymis of one bull. Breakdown of nucleoprotein is considered to be a source of the ammonium urate.—E. J. H. FORD.

NICHOLSON, J. A. (1949.) **The laboratory diagnosis of pregnancy in thoroughbred mares.**—*Irish Vet. J.* 3. 316-324. 1804

N. found the Aschheim-Zondek test the most suitable using female mice 21 days old and examining the blood between the 40th and 60th days of pregnancy. A new test for the detection of oestrogen in the urine is indicated.—J. K. GAN.

WARNICK, A. C., CASIDA, L. E., & GRUMMER, R. H. (1950.) **The occurrence of estrus and ovulation in postpartum sows.**—*J. Anim. Sci.* 9. 66-72. [Authors' summary copied *verbatim*.] 1805

Data are presented on 36 sows that were checked for a postpartum heat and later killed to determine the condition of the ovaries. Eighteen of the animals came into heat and were bred, but only 2 of the 18 ovulated (pigs dead at birth in one and immediately after birth in the other). None of the nonestrous sows had ovulated when killed 10 days postpartum. An experiment to test the effect of suckling did not show it to be a factor inhibiting ovulation. There was, however, a lesser follicular volume in suckled sows than in nonsuckled sows. It is suggested that an extra-ovarian source of estrogen is responsible for the postpartum anovulatory heat.

VAN RENSBERG, S. W. J. (1949.) **Contagious**

epididymitis and vaginitis in cattle.—*Fmg S. Afr.* 24. 866 & 870. 1806

This is a contagious venereal disease of cattle which causes infertility in both bulls and cows, and appears to be limited to the Continent of Africa, where it is the most serious breeding condition encountered. The causal agent is probably a virus transmitted by coitus, and possibly by mechanical methods such as flies. Zebu cattle are resistant, but the cows may harbour the virus and transmit it to susceptible bulls during coitus.

In the bull the first abnormality noted is an enlargement and hardening of the epididymis. At this stage the bull serves well, transmitting the infection, but eventually becomes sterile. In the cow, an anterior vaginitis is caused first, and when examined with a speculum the anterior vagina and the cervix are red, tender, bleed easily, and usually contain a variable quantity of yellowish white pus. Such cows may recover completely after some months and may breed again, but the infection may spread forward into the uterus and fallopian tubes and render the animal permanently sterile. Cows that have recovered harbour the infection indefinitely, and do not develop an immunity.

There is no known treatment, and the use of artificial insemination is the best method of control. Great care must be taken to see that newly purchased cattle are free from infection.

—J. O. L. KING.

DIERNHOFER, K. (1949.) **Ergänzende Versuche über "Deckseuchenschutzmittel."** [Supplementary experiments on prophylactics against diseases of the genital system.]—*Wien. tierärztl. Mschr.* 36. 497-499. 1807

Further experiments are reported on the effect of certain silver preparations "protargol" and "collargol" on cultures of *Trichomonas* and of various bacteria.

"Collargol" in a concentration of 1:2,000 and "protargol" at 1:500 failed to kill *Trichomonas*. A culture of *Trichomonas* left in the incubator for 24 hours with 1% "protargol" infected a cow when injected into the cervix.

Against bacteria (*Staphylococcus aureus*, *Streptococcus agalactiae*, *Corynebact. pyogenes*, *Brucella abortus* and *Haemophilus influenzae*) growing in liquid blood agar "collargol" was more effective than "protargol", but neither preparation was effective in low concentrations.

These experiments support the previous finding of the ineffectiveness of these silver preparations *in vitro*; a finding which was considered surprising at the time and possibly because of the silver preparations being of poor quality in the bull pessaries used.—E. G. WHITE.

EDWARDS, J. (1949.) **Variations in fertility levels in bovines.**—*Brit. J. Nutrit.* 3. 87-90. 1808

This paper is based on the information obtained from records of the 40,000 herds of cows which are being inseminated in Great Britain, and for which individual cow and herd conception-rates are kept, and those of the 450 bulls in the centres from which semen collections are being taken weekly. The calving records show that 21.5% of heifers and 18.9% of cows calve in October, indicating that although most farmers would like most of their cows to calve during this month, their breeding cycles get out of control and heifer replacements have to be introduced. Taking the conception rate (C.R.) as the percentage of cows inseminated for the first time which have not returned to service in three months, about 18% of herds have a C.R. of less than 50% and 22% of herds an average of over 75%. The average for 63,500 cows was 64.4%.

The seasonal variations in C.R. are shown by these percentages:—Jan.-Mar. 64.4, Apr.-June 62.9, July-Sept. 66.2, Oct.-Dec. 64.4. The differences are not as great as most workers expected.

The bulls are fed a standard concentrate ration and the conception rates of those in service vary by 10-15% (bulls with an abnormally low C.R. are withdrawn from service). The semen producing ability of a bull cannot be judged by two test ejaculates and a semi-exhaustion test (ten ejaculates in two hours) should be used. Research is needed on the significance of the changes in a bull's fertility levels throughout the year.

—J. O. L. KING.

CUSHING, J. E. (1948.) **"Acorn calves" and biochemical mutation.**—*J. Amer. vet. med. Ass.* 113. 75-76. 1809

The acorn calf condition, characterized by markedly shortened limbs, abnormally developed skull, arched back, locomotor incoordination and chronic intestinal tympany, and mistakenly so termed on account of the popular belief that it is caused by the excessive feeding of the dam on acorns, has come through the accumulation of experimental data to be regarded as a congenital deformity rather than an inherited abnormality. In the interpretation of further studies of the genetics of this and similar occurrences in domestic animals, C. postulates an alternative theory: that these conditions may be due to one or more biochemical mutations that affect the pregnant dam only when diet is inadequate to compensate for their effects. In support of his theory, C. cites experimental results obtained with the red bread mould, *Neurospora crassa*, which demonstrate that a wide variety of the biochemical activities of

organisms are under genetic control.—R. O. M. LANDTMAN, B. (1948.) **On the relationship between maternal conditions during pregnancy and congenital malformations.**—*Arch. Dis. Childh.* 23. 237-246. [Abst. in *Bull. Hyg., Lond.* 24. 291-292. (1949), copied *verbatim*. Signed: A. BRADFORD HILL.] 1810

The author briefly reviews the literature dealing with the influence of various factors upon the incidence of congenital malformations, e.g., such factors as age and parity of the mother, mechanical factors or an abnormal foetal implantation, X-ray and radium irradiation, and various other foetal environmental conditions such as lead poisoning and alcoholism. He concludes that environmental features play an important part in the aetiology of congenital defects, but that the abnormalities are not of any characteristic type in relation to the various causes. The most important factor appears to be the stage at which foetal development is disturbed. Malformations due to environmental agents may simulate abnormalities of genetic origin.

The author then reports his own investigation which comprises the records of 73 mothers who gave birth to malformed children during 1945-48 at the Obstetric Hospital, University College Hospital, London. The records of two hundred mothers who gave birth to normal children at the same hospital in the same period were extracted for comparison. The ante-natal records of these women contained detailed information on their health before and during pregnancy. The mean age of the mothers of malformed children (28.6 years) was significantly higher than that of mothers of normal children (26.5) and included more multiparae: 19 per cent. of them had had previous abortions and only 7.5 per cent. of the controls. No clinical signs of undernourishment or vitamin deficiency were apparent, no psychical disturbances during pregnancy were noted and no mother herself revealed congenital malformations. Ante-partum haemorrhage occurred in 20.5 per cent. of pregnancies resulting in a malformed child and in 4.8 per cent. of the controls. Toxaemia showed no differing incidence. Various morbid states were observed in 42.5 per cent. of the mothers giving birth to malformed children and in only 14.5 per cent. of the control mothers. In the former group (of 73) there were 12 instances of influenza, "cold", sore throat, cough, pneumonia and (one case) pyelitis, all in the first three months of pregnancy; in the latter group (of 200) there were only nine such occurrences and only three were in the first trimester. In the abnormal group there were 4 cases and in the normal group 6 cases of inactive pulmonary tuberculosis. In the former there were 16 miscellaneous conditions and

in the latter, and much larger, group only 14. It is possible, therefore, that these and other such

See also absts. 1668 (flystrike and fertility in rams); 1688-1689 (effect of hereditary factors on trichostrongylosis in sheep); 1855 (book, reproduction); 1856 (book, insemination and sterility); 1857 (book, reproductive disorders); 1858 (book, placentitis); 1859 (book, husbandry).

ZOOTECHNY

BONSMAN, J. C. (1949.) **Breeding cattle for increased adaptability to tropical and sub-tropical environments.**—*J. agric. Sci.* 39. 204-221. 1811

The characteristics which are associated with adaptability to adverse climatic influences are discussed. Solar radiation includes long-wave, medium-wave and short-wave rays, short-wave radiation being more intense at high altitudes. The effects of solar radiation on the animal depend upon the nature and quantity of the rays which impinge upon it. Medium and long-wave rays are effectively reflected by white, yellow or red hair, but not by black hair. The short-wave rays are resisted by yellow, red and black skin colours. The dark skin with a white, yellow or red coat of hair is ideal for low altitudes and this combination is frequently seen in indigenous breeds of cattle in tropical areas. Black hair and black skin is a good combination at high altitudes where mists or shade afford protection from direct sunlight.

For resistance to high atmospheric temperature, evaporation of moisture from the surface of the skin and radiation of heat are important and both depend on the quality of the coat cover. Furry coated cattle have poorly developed sweat and sebaceous glands as compared with smooth coated cattle, and so cannot dispose of heat efficiently by radiation. The conformation of the body also influences heat-loss. The tropical breeds are respiratory types and British beef breeds maintained in the tropics tend to change their typical conformation and to approach the respiratory type with wide chest, contracted abdomen and flat ribs. Heat tolerance in cattle increases with age, so if a calf has high tolerance its powers of resistance as an adult will be high; selection can therefore be made at an early age. Skin cancers and photosensitivity occur in cattle with white hair and skin. Cancer of the conjunctiva is seen in Hereford cattle with white faces and unpigmented eyelids and is possibly caused by solar radiation. The incidence can be reduced by selecting for breeding bulls which have a brown ring round the eyes and pigmented eyelids. Humidity, nutrition, reproduction, production of beef and milk and resistance to disease as affected by adaptability are also discussed. The article is well illustrated and has a number of useful tables and graphs.—M. C.

McMEKAN, C. P. (1948.) **Ruakura research**

disorders are in some way involved in the aetiology of foetal malformations.

shows how to rear well-grown dairy heifers.—*N.Z. J. Agric.* 77. 138-141. 1812

The author reports the results of eight years' grazing trials comparing the growth and later the production of dairy heifers reared under two systems of grazing. One group of calves from one month old were rotated through the same pastures as the dairy herd, but a few days ahead of it. The other group were "set-stocked", *i.e.*, reared in one paddock. The rotated calves entered their first winter 70-100 lb. heavier than their set-stocked mates and without losses. By the second winter the difference was 140 lb. The rotated calves did not require drenching for parasites, the set-stocked calves required regular drenching to prevent losses.

The practicability of the rotational system of grazing has been shown by many farmers, but as some failures have been reported, the following points are emphasized as essential for success. (1) Rotation round the same pastures as the dairy herd before grazing by the herd. (2) Regular and frequent moves, preferably every one or two days. (3) Starting rotation at an early age, from at least one month of age.

Calves, being highly selective grazers, pick out only the best of the pasture leaving the main bulk to the older animals. Diarrhoea on lush pasture following rain after dry periods can be prevented by feeding hay until such pastures have matured. Rotated calves do not require more labour to get them to the dairy shed for feeding as they soon adapt themselves to the movements the system involves.

Whether these treatments will result in differences in size and weight and producing ability on maturity will be shown later, as the groups are being kept on the same systems of grazing for their productive life. Results for three years show that well grown stock out-yield their poorly reared mates by 50 lb. of fat annually. Trials are under way to test the effect of transferring poorly reared two-year-olds after calving to the rotational system and *vice versa*. Indications so far suggest that good rearing is paying dividends during the early milking life.—J. P. JAMES.

WARD, G. M., & SMITH, V. R. (1949.) **Total milk production as affected by time of milking after application of a conditioned stimulus.**—*J. Dairy Sci.* 32. 17-21. 1813

Five cows which had been conditioned from

the beginning of their lactations to a hot water wash and massage several minutes before milking, were selected.

For a ten-day preliminary period, each half of the udder was milked simultaneously into a separate container, the hot water wash and massage being given two min. before milking. During the experimental periods, one half of the udder (the control) was milked at 2 min. and the other half at 4, 8, 12, 16 or 20 min. after stimulation. One half of the udder alternately served as a control and for experiment and the experimental periods were of five days' duration. Each cow was subjected to each treatment. There was a highly significant decrease in production when the cows were milked 12 or more min. after stimulation, but the differences in production obtained by milking at 2, 4 and 8 min. were not significant.

—J. O. L. KING.

DODD, F. H., FOOT, A. S., & HENRIQUES, E. (1949.) **Experiments in milking technique.** 5. Effect of temporary changes in the interval between washing and milking. 6. Comparison of established washing and milking routines. —*J. Dairy Res.* 16. 301–309. [Authors' summary copied *verbatim*.] 1814

Cows accustomed to preparation for milking 1 min. before putting on the teat cups were on

single mornings (a) milked without preparation, (b) milked 3 min. after preparation, (c) milked 6 min. after preparation. On treatment (a) "let-down" was delayed but thereafter milking rate was not abnormal. Treatment (b) had no pronounced effect on milking efficiency, but treatment (c) resulted in a slightly slower rate of milking and a reduced yield of milk and butterfat.

In a second experiment a comparison was made between two established routines, in one of which udder washing, fore-milking and concentrate feeding was done less than 1 min. before milking and in the other more than 20 min. before milking. The data suggest that milking immediately after preparation was the more efficient routine, although the differences were not very great.

MOULE, G. R. (1949.) **Hand-feeding sheep in drought time.**—*Qd. agric. J.* 68. 234–238; 296–306; 345–352. 1815

This series of articles forms a review in which M. discusses the use of climatological data in assessing the probable incidence of drought, the economics of choosing rations for hand-feeding during drought, the food requirements of different classes of sheep and special techniques of flock management in relation to drought feeding.

—R. L. REID.

TECHNIQUE AND APPARATUS

CIPRIANI, P. L. (1947.) Alcune ricerche sul metodo di colorazione proposto da Dold. [Dold method of staining.]—*G. Batt. Immun.* 36. 35–42. [English, French & German summaries.] 1816

In Dold's method smears and sections are first stained with carbol-aniline green, then, as in Gram's method, mordanted with Lugol's iodine, and differentiated. The counterstain is Bismarck brown. Dold-negative bacteria stain brown, Dold-positive bacteria green.

Over 20 species of organisms were stained by the methods of Gram and of Dold, and the results compared. As far as the *Schizomycetes* were concerned the Gram-negative species were always Dold-negative, but the Gram-positive species were sometimes Dold-positive, sometimes Dold-negative, uncertain or variable. Thus the Dold staining technique is useful for subdividing Gram-positive organisms. The *Blastomycetes*, whether Gram-positive or Gram-negative, were always Dold-positive.—L. M. MARKSON.

MITCHELL, P. (1949.) **A new technique for stirred aerated culture.**—*Nature, Lond.* 164. 846–847. 1817

The culture is stirred in a flask rotating at

three revolutions per sec. about its axis which is tilted at an angle of 45° to the vertical plane. Aeration is provided through open tubing fixed to the head of the flask and rotating with it. The air passes through a cotton-wool filter to avoid contamination.—A. MAYR-HARTING.

WELD, J. T. (1947.) **A streak plate method for determining growth curves.**—*J. Lab. clin. Med.* 32. 1189–1152. [Author's summary copied *verbatim*.] 1818

A simple streak plate method for demonstrating growth curves of *Staph. aureus* under the influence of antibacterial agents is described. Graphs are presented showing the effect of the following antibacterial agents: *Phenol*: A rapidly bactericidal substance which kills the organisms in a concentration only slightly higher than one which has even no inhibiting effect. *Streptomycin*, *Streptomycin*, *Clavacin*, *Penicillin* and *Protoanemonin*: Antibacterial agents which kill the organisms in eight hours or less in concentrations not more than 40 times the noninhibiting doses. *Mn. protoporphyrin* and *Suspensions of Sulfur in Alcohol (Alcohol-Sulfur)* and in *Carbowax (Carbowax-Sulfur)*: Purely bacteriostatic preparations which fail to kill the organisms in eight

hours in the highest concentrations tested but inhibit growth completely in minute fractions of such amounts.

HIGGINS, M. (1950.) **A comparison of the pour plate and surface plate methods in estimating bacterial infection of table crockery and kitchen utensils.**—*Mon. Bull. Minist. Hlth publ. Hlth Lab. Serv.* 9. 52–53. [Author's conclusions and summary copied *verbatim*.] 1819

When calcium alginate swabs are employed for the quantitative and qualitative bacteriological examination of kitchen and table utensils after normal washing procedures, the surface blood agar plate method is superior to the yeastrel [an extract of yeast containing vitamins of the B complex—Ed. V. B.] milk agar pour-plate technique.

HIGGINS, M. (1950.) **A comparison of the recovery rate of organisms from cotton-wool and calcium alginate wool swabs.**—*Bull. Minist. Hlth publ. Hlth Lab. Serv.* 9. 50–51. [Author's conclusions and summary copied *verbatim*.] 1820

The use of calcium alginate wool as a substitute for non-absorbent cotton-wool for swabs to be used in quantitative work seems to be justified, since the recovery of organisms is much greater. Methods for the bacteriological examination of tableware are liable to be influenced by many variable factors and the elimination of any one of these may help towards establishing a more standard technique.

CLOCK, R. O. (1947.) **Fluid thioglycollate medium. Its use for testing the sterility of surgical catgut sutures.**—*J. Lab. clin. Med.* 32. 1153–1158. [Author's conclusions copied *verbatim*.] 1821

The experiments herein described demonstrate that bacto-fluid thioglycollate medium is superior, in the following respects, to the U.S.P. XII culture media for testing the sterility of surgical catgut sutures: (1) A smaller inoculum supports the growth of anaerobic bacteria, such as *Cl. novyi*. (2) Gas forms earlier, and maximum bacterial growth occurs from a much smaller inoculum. (3) No seal is required for anaerobiosis, since the sodium salt of thioglycollic acid lowers the oxidation reduction potential which is maintained for a considerable period of time by the agar in the medium. (4) Preliminary incubation in distilled water and inactivating fluids, for the purpose of removing bacteriostatic mercurial salts with which the sutures may be impregnated, is not required. (5) The sodium salt of thioglycollic acid in the culture medium effectively neutralizes the bacteriostatic action of mercurial compounds when present in catgut sutures in amounts up to 3.5 per cent.

Since these experiments were completed, the Committee of Revision of the United States Pharmacopoeia adopted the National Institute of Health formula for fluid thioglycollate medium for use in Sterility Tests for Liquids and Solids, and it will become the official sterility test medium in the U.S.P. XIII.

MARMELL, M. (1948.) **Test tube sealed to hen's egg following inoculation.**—*Amer. J. clin. Path.* 18. 587–588. 1822

A 4 cm. length of glass tubing with an internal diameter of approximately 15 mm. is sealed over the shell opening with Adams' sealing cement or viscoloid (a proprietary trade name for pyroxylin plastics) in acetone. The other end is closed with a wool plug. Frequent sub-cultures or smears can be made more readily through the end, as from a test tube, than when other methods of sealing eggs are used.—H. H. SKINNER.

WHITLOCK, H. V. (1948.) **Some modifications of the McMaster helminth egg-counting technique and apparatus.**—*J. Counc. sci. industr. Res. Aust.* 21. 177–180. 1823

The essential changes are the use of a sieve pipette for removal of the sample from the faeces saline suspension and a modified type of counting chamber slide which is described. A glassware cement with many uses is also described.

—H. McL. GORDON.

HOVORKA, J. (1949.) **Nová methoda kvantitativneho určovania entoparazitárnych vajíčiek. [A method to determine quantitatively the eggs of endoparasites.]**—*Čas. československ. Vet.* 4. 362–372. 1824

Lines on a slide are engraved to give an area of 20 mm. × 20 mm. divided into squares of 1 mm. × 1 mm., the surface of this portion being 0.2 mm. lower than the surface of the slide. Using an appropriate dilution of faeces and general technique, worm egg counting was satisfactorily done.—E. G.

OVERGAARD, C. (1948.) **A simple method for orientating small objects for sectioning, with special regard to nematodes.**—*Quart. J. micr. Sci.* 89. 437–438. 1825

After fixing, dehydrating, and clearing, the nematode is placed 1 mm. from the bottom of a glass cell containing a depth of 2 mm. of melted paraffin wax. Under a binocular microscope at about 40-fold magnification, the object is orientated in such a way that the intended plane of section is parallel with the bottom, the manipulation being done with hot needles and the paraffin wax being kept liquid by cautious heating. A block with sides about 5 mm. long, and enclosing the object, is cut and this is then lowered on to the plane upper surface of a block of paraffin wax attached

to a block of wood in the microtome, the contacting surfaces being first warmed by radiant heat from a hot lancet. By lowering the block holder, sections in the required plane may now be cut.

—G. B. S. HEATH.

LAGERCRANTZ, C. (1947.) **Photoelectric counting of individual microscopic cells.**—*Uppsala Läk-Fören. Förh.* 52. 287–303. [Abst. in *Biol. Abstr.* Sect. F. 22. 27. (1948), copied *verbatim*. Signed: B. G. ANDERSON.] 1826

A photoelectric apparatus for counting individual microscopic cells in fluid suspensions is described. With erythrocytes and yeast cells the counts agree well with those secured by ordinary counting chamber methods. To obtain accurate results the suspensions of cells must be uniform and free of contaminations. Some forms of bacteria can also be counted.

TANNENBERG, J. (1949.) **Automatic tissue dehydrating and embedding apparatus.**—*Amer. J. clin. Path.* 19. 1061–1069. [Author's summary slightly modified.] 1827

An inexpensive, automatic, dehydrating and embedding apparatus is described that shortens the dehydrating period considerably, requires no handling of single tissue specimens, and delivers the specimens as paraffin tissue blocks within the same compartments of the tissue carriers in which they were placed prior to dehydration or even fixation. It is economical for even a single specimen, and as many as 100 specimens can be handled simultaneously.

VIRIDÉN, P. (1949.) **Apparatur för pipettsköljning vid serodiagnostiska rutinundersökningar. [Apparatus for flushing pipettes in serodiagnostic routine examinations.]**—*Nord. Vet.*

See also absts. 1556–1558 (Tween 80); 1583 (medium exposed to oxygen for growth of *Brucella*); 1586 (effect of magnesium in media on bacterial growth); 1592 (culture media for *Cryptococcus farciminosus*); 1623 (methods of inoculating g. pigs with F. & M. disease virus); 1624 (cultivation of F. & M. disease virus on chick embryo); 1629 (small pox vaccine purification using penicillin); 1854 (book, bacterial count in milk); 1860 (book, microscopy).

MISCELLANEOUS

KESTER, W. O., & MILLER, E. B. (1949.) **Atomic warfare and the veterinary profession.**—*J. Amer. vet. med. Ass.* 114. 118–119. 1831

In addition to the important blast and thermal effects which, although more serious, are not different in kind from those following a conventional H.E. explosion, a new type of situation would face the veterinary surgeon following the explosion of an atomic bomb, caused by radio-activity arising either from the bomb itself or the fission products, or from animal tissue or other substances with neutron-induced radio-activity. The effects of radio-activity will not be confined to the area of the bomb explosion (bomb "cloud") and may persist for a long time.

Med. 1. 343–347. [English summary.] 1828

A vacuum is produced by means of a water pump driven by a one-third horse power electric motor. A main conduit pipe under the working bench is connected with the pump and the pipettes can be attached to rubber tubing fixed to the pipe, being held in position by spring clips, and can thus be flushed.—L. M. MARKSON.

JARRETT, I. G. (1948.) **Continuous intravenous injection in sheep.**—*J. Coun. sci. industr. Res. Aust.* 21. 316–318. [Author's summary copied *verbatim*.] 1829

A method is described whereby continuous intravenous injection can be maintained in sheep for periods up to four weeks. During the course of the injection the sheep remains in good condition and the subsequent useful life of the animal is in no way impaired.

KERSTEN, H., BROSENE, W. G., JR., ABLONDI, F., & SUBBAROW, Y. (1947.) **A new method for the indirect measurement of blood pressure in the rat.**—*J. Lab. clin. Med.* 32. 1090–1098. [Authors' summary copied *verbatim*.] 1830

A new method and instrument for the indirect determination of blood pressure of the rat has been described. This procedure does not require the heating or the anesthetization of the animal. The principle of its functioning is based on measuring the volume change in the foot by means of a photoelectric cell before and after application of pressure by means of a miniature sphygmometer cuff applied to the ankle of the foot.

By this method the average indicated systolic blood pressure of a group of seventeen normal, unheated, unanesthetized rats was found to be 117 mm. \pm 8 mm. Hg. The indicated venous pressure was found to be 18 mm. \pm 4 mm. Hg.

Problems will arise concerning:—"radiation sickness"; the efficiency of animal transport that may be required to supplement or replace mechanical transport; the disposal of the animals killed by or surviving the explosion; the breeding, rearing and feeding of stock; the contamination of food and food containers; the use of local veterinary personnel, facilities, equipment and drugs to the best advantage for veterinary purposes and, if need be, to supplement medical services. Many problems are as yet unsolved, and further research is needed.—E. COTCHIN.

HAGEMANN, E., & VOIGTS, H. (1948.) **Bio-klimatischer Atlas für Schleswig-Holstein. [Bioclimatical atlas of Schleswig-Holstein.]**—

Lübeck: Forschungsstelle für landwirtschaftliche Planung und Landschaftsgestaltung. DM. 60. 1832

This atlas of Schleswig-Holstein is of certain veterinary interest as illustrating a connexion between climate and soil and animal health and disease. The 60 maps convey exact data regarding

distribution of rainfall, temperature, humidity of the air, frost and fog formation, wind and atmospheric pressure and vegetation. The maps giving the relationship between weather, soil composition and vegetation may be of interest. Flowering times of certain important plants are also given.

—E. G.

REPORTS

UNION OF SOUTH AFRICA. (1949.) **The health of the Union's livestock. Annual Report of the Division of Veterinary Services 1947-1948.**

[DE KOCK, G.]—*Fmg S. Afr.* 24. 65-78; 121; 153. 1833

This report, dealing with field and laboratory control of animal disease and live stock husbandry, covers a year from mid 1947 to mid 1948. During the year the Director, Dr. P. J. du Toit, retired and was succeeded by Dr. G. v. d. W. de Kock.

Among a wide range of animal diseases under investigation TRYPANOSOMIASIS was of interest, since dusting with D.D.T. and with benzene hexachloride powder together with barrier and discriminative bush clearing yielded results so encouraging that the game eradication campaign was temporarily suspended. Phenidium chloride and dimidium bromide were extensively used for the treatment of infected cattle.

LUMPY SKIN DISEASE, which first became evident in late 1944, continued to spread and disrupted the cattle industry in the affected areas. The virus was successfully cultivated in embryonated hens' eggs. Further research proceeds. AFRICAN HORSE SICKNESS appeared to be less common in spite of weather conditions ordinarily regarded as favourable for its spread. Over 120,000 doses of a vaccine, which contained eight strains of virus, were issued for field use. A severe outbreak of PSITTACOSIS occurred in a large consignment of gouldian finches which had been imported from Australia.

Benzene hexachloride and D.D.T. dips proved effective in many areas against arsenic-resistant blue ticks, but in certain parts 0.16% arsenious oxide was included to control the interrupted feeding ticks.

Numerous other diseases were under control in the field and the subject of experimental investigation at the laboratory. The production of vaccines continued on a large scale, nearly 17 million doses being produced during the year. Chemical and biochemical problems, particularly of mineral metabolism and nutrition, were examined.

The field staff was fully occupied, particularly in view of the continued shortage of professional staff.—S. BRIAN KENDALL.

U.S.A. MICHIGAN. (1947.) **Eighth annual report of the Regional Poultry Research Laboratory, East Lansing, Michigan. July 1, 1946 to June 30, 1947.** [WINTON, B.] pp. 18. [Mimeographed.] 1834

This report summarizes the work of the East Lansing Laboratory from July 1946 to June 1947. The director emphasizes the persistence of high mortality among U.S. poultry flocks which is estimated at 17.4% *per annum*.

Breeding for resistance to LYMPHOMATOSIS is still the major objective of this laboratory and strains of poultry of high and low susceptibility are maintained for research purposes. Studies on possible organ specificity on the part of the virus, on natural transmission and transmission by inoculation are continuing. The possibility of a serological test is being investigated.

Data on SODIUM FLUOROACETATE POISONING IN CHICKENS are recorded. The haematology of blood spots on eggs was investigated and studies in the normal histology of the fowl continue. A list of staff publications is appended.—D. LUKE.

U.S.A. MICHIGAN. (1948.) **Ninth annual report of the Regional Poultry Research Laboratory, East Lansing, Michigan, July 1, 1947 to June 10, 1948.** [WINTON, B.] pp. 21. [Mimeographed.] 1835

This report summarizes the work on LYMPHOMATOSIS in progress at East Lansing and various co-operating Agricultural Experiment Stations. Studies in progress are described under various headings, *e.g.* Cause of lymphomatosis, Natural Transmission, Studies in Tumour Strains, Vaccination Trials, Breeding for Resistance and Susceptibility, Localization of Fowl Paralysis in the Central Nervous System and the use of Chick Embryo Techniques in the Study of Avian Leucosis.

Publications by the staff in the various journals are listed.—D. LUKE.

BOOK REVIEWS

KEEFER, C. S. [M.D.; Wade Professor of Medicine, Boston University School of Medicine].

(1949.) **The uses of penicillin and streptomycin.** pp. 72. Lawrence, Kansas: University of

Kansas Press. Porter Lectures, Series 15.
\$2. 1836

These three lectures describe in simple elementary terms, the uses of penicillin, streptomycin and the antibacterial agents (including gramicidin) from microbes. No references are given.—MALCOLM WOODBINE.

ROLLE, M. (1949.) *Mikrobiologie und allgemeine Seuchenlehre.* [Microbiology and epidemics.] pp. xvi + 489. Stuttgart: Ferdinand Enke. DM. 22.70. 1837

Professor Rolle, head of the department of bacteriology and infectious diseases in the veterinary faculty at Munich, has written this book for veterinary students and practitioners. The inclusion of a large number of photomicrographs of bacteria and viruses taken with the electron microscope by Professor Ruska and others is cited as a special feature of the book, but it is likely that for a student's textbook it would be preferable to provide more photomicrographs of organisms as they can be seen with the ordinary microscope to which students and practitioners have access.

The classification of bacteria is rather confusing. Whereas the various salmonella are listed under their usual names, they are grouped also (p. 19) with a whole variety of organisms which are also classed as "*Bacterium*"; these include the organisms causing brucellosis and pasteurellosis and also *Erysipelothrix monocytogenes* infection. Clostridia receive a variety of names, but are never called clostridia. The Lancefield grouping of streptococci is not mentioned.

The tuberculin test is described, but the significance of using avian tuberculin in cattle is not mentioned. It is stated (p. 141) that cattle which fail to react to mammalian but react to avian tuberculin are infected with Johne's disease. There is no mention of the use of white mice for the diagnosis of rabies or of anaerobic jars for the cultivation of anaerobes. For the latter purpose the author recommends Fortner's micro- or macroplate method in which a luxuriant growth of *Bact. prodigiosus* produces anaerobic conditions and the characters of the individual colonies serve for differential diagnosis. "Actinomycosis" in cattle is still discussed as a single disease and no attempt is made to differentiate the lesions caused by *Actinomyces* and *Actinobacillus* although these organisms are referred to separately in the preceding paragraphs.

Veterinary bacteriology is therefore presented somewhat unevenly and, to readers of British and American textbooks, the book will seem confusing.

There are, however, some good features. Emphasis is laid on the general characters of bacteria and viruses and the epidemiology, diagnosis and control of the diseases which they

produce, rather than on the detailed morphological cultural and biochemical characters of the causal organisms. Tables are given which show the incubation period, the portal of entry of the organism and methods of excretion and considerable attention is paid to pathogenesis and to the lesions observed P.M. There are seven pages of references to the literature.

Protozoa are dealt with in a chapter of 22 pages and virus diseases occupy 80 pages. There are tables giving the morphological features of viruses as observed by the electron microscope and the characters of the diseases of man and animals which these viruses produce.—E. G. W.

PAGEL, W., SIMMONDS, F. A. H., MACDONALD, N., & FATTI, I. [Revised by.] (1948.) *Kayne, Pagel & O'Shaughnessy's Pulmonary Tuberculosis. Pathology, diagnosis, management and prevention.* pp. xviii + 720. London, New York, Toronto: 2nd Edit. Geoffrey Cumberlege, Oxford University Press. 63s. 1838

A new edition of Kayne, Pagel and O'Shaughnessy is an event for all those interested in tuberculosis. In producing this new edition Pagel has had the assistance of a new team of collaborators and the book has been almost entirely rewritten. It is, of course, intended primarily for students of human medicine, but the sections on pathology contain much of interest to the veterinary scientist. References are not cited very frequently and this might cause one to doubt the validity of statements in some books, but on reading the present work one immediately feels that it is authoritative.

A possible life-cycle, the biochemistry and variability of the tubercle bacillus are discussed. The histogenesis of the tubercle, and the pathogenesis of bronchogenic phthisis (the main problem in human TB.) are dealt with in detail. Pagel presents evidence indicating that resistance and hypersensitivity are dissociable phenomena; the cellular factor, as such, is not essential for the production of resistance in TB.; resistance is due to excessive production of antibodies which prevent hypersensitivity. In resistance without sensitivity tissue activity as judged by antibody production is therefore certainly not less in extent, but it is less conspicuous than in resistance with hypersensitivity. The tubercle-like granuloma and its rapid formation may be regarded as the histological expression of successful fixation of the antigen (treated as a foreign body) by a sensitized tissue, by means of specific antibodies. In TB., allergy consists of a modification of the course of response rather than of the development of any particular tissue change (such as exudation, proliferation, etc.). Among the tissue changes that occur in TB., liquefaction is the one in which the

allergic factor is most conspicuous. Liquefaction occurs in a caseous lesion as the result of multiplication of tubercle bacilli (which may be due to non-specific lowering of the resistance of the body). This is equivalent to an increase of the specific antigen in a sensitized tissue, and causes hypersensitive exudation with liquefaction of the caseous tissue.

Primary and post-primary infection are carefully described and it is emphasized that their basic features are the same in adults and children. The most obvious difference between a primary and post-primary lesion is the failure of the latter to produce caseation in the regional lymph node; this is an indication of increased resistance. It will be realized that in a very resistant individual primary infection will produce a much smaller lesion in the regional lymph node than in a susceptible individual. In some animals, such as cattle, post-primary lesions produce caseation in the regional lymph node, but it is less marked than in the node associated with the primary lesion. This type of post-primary complex occurs very rarely in man.

It is unfortunate that the short section devoted to bovine type infection, as in many books dealing with human TB., is not so well informed as the rest of the book. It is stated on page 674 that it has been maintained that the destruction of every tuberculin-positive cow *might* result in such a depletion of cattle as to cause a serious shortage of milk. There can be no doubt about this because it would mean the destruction of about 30% of the cows in the country. The following methods of controlling TB. in cattle are mentioned: (i) the building up of tuberculin-negative herds, which originated in Denmark, (ii) the slaughter (with compensation to the owner) of clinically tuberculous cattle, as in England, and (iii) the encouragement of the sale of milk known to have been obtained from tuberculin-negative cows or prepared under conditions that exclude the presence of tubercle bacilli.

Methods (i) and (iii) appear to be more or less the same. It is stated that the first appears to be impracticable on a large scale and that the third, also tried in England, is not a success. These two statements are hardly correct because method (i) has been used to eradicate TB. completely from Denmark and method (i) or (iii) has led to the creation of herds containing over a million tubercle-free cattle in Great Britain, *i.e.*, about 14% of the total cattle population.

It is also stated that "the farmer should be given an economic incentive to produce clean milk. In the past the tendency has been in the reverse direction." This statement seems strange, because there has for long been a clean milk bonus, and

the clean milk plus the tubercle-free bonus is at least 4d. per gallon.—JOHN FRANCIS.

GOHAR, N. [M.R.C.S., L.R.C.P.; Assistant Professor, Parasitology & Mycology, Dept. of Clinical Pathology, Kasr el Ainy Faculty of Medicine, Fouad I University, Cairo]. (1948.) *Mycoses and practical mycology*. pp. xi + 234. London: Baillière, Tindall & Cox. 25s. 1939

This book will be found useful for those requiring a short account of the various fungus infections of man. There is a short opening chapter on the general biology and classification of fungi and the diseases caused by the fungi are described in some detail. There is a list of fungicides and a number of prescriptions for treatment, and recipes for media are given. The book is profusely illustrated, and has four plates in colour.

The absence of any list of references is disappointing.—J. J. BULLEN.

TRUSSELL, R. E. [M.D.; Associate in Hygiene and Preventive Medicine, State University of Iowa]. (1947.) *Trichomonas vaginalis and trichomoniasis*. pp. xii + 277. Oxford: Blackwell Scientific Publications. 25s. 1940

The author of this book reviews the extensive literature published over many years and includes details of his own experiments and wide clinical knowledge.

To the reviewer some of the chapters are confusing and inadequate. The most serious criticism is that far too many quotations are given, some at considerable length which are obviously out of step with present-day knowledge and are definitely misleading. For example, two pages are devoted to Wagner and Hee's work in which they held that extensive human outbreaks were caused by epidemic infections arising from cows' milk and, moreover, that the bovine trichomonads were isolated in hundreds of cases from blood, intestines, genital organs and mammary glands and from horses, cattle, dogs, cats and pigs. They also suggested that cattle were the reservoir host for human infections.

Another loose expression used in several quotations is that transition takes place from *Tr. foetus* to *Tr. vaginalis*. This is incorrect as these are two completely different parasites not related clinically, antigenically or otherwise. The veterinary evidence on this is very definite and factual.

Another criticism is that the author states in his references to *Tr. foetus* that it is a vaginal parasite similar in character to *Tr. vaginalis*. This is actually an important point of difference between the two parasites, *Tr. foetus* is a uterine parasite and its presence in the vagina is incidental, whereas *Tr. vaginalis* is a true vaginal parasite.

The chapter on antigenicity is poor, particu-

larly on account of its omissions. A considerable amount of work has been published on this subject regarding *Tr. foetus*. An interesting omission is that no reference is made to the fact that in *Tr. foetus* there are two completely different antigenic groups although they are clinically identical and that all isolated strains fall into one or other of these groups.

From the point of view of the veterinarian this book is of little value. On the human side it does show that a great deal of factual knowledge and keen observation is still required if only to clear up the sometimes surprising fallacies that exist regarding *Tr. vaginalis*.

The book is excellently printed.—W. R. K.

FRANCIS, T., Jr. [M.D.] [Edited by]. (1948.) **Diagnostic procedures for virus and rickettsial diseases.** pp. vii + 347. New York City: American Public Health Association. 1st Edit. 1841

This volume is a compilation of the laboratory methods at present applicable to the diagnosis of virus and rickettsial diseases of man.

Each chapter is written by an authority actively engaged in the study of the disease under discussion.

Details of the methods available for the study of each disease are presented at length. This has resulted in considerable repetition and the presentation by different writers of minor modifications of technique.

The book is conceived as a manual for the laboratory worker and the student of human disease.

Whilst the only virus diseases of animals discussed are those transmissible to man (rabies, psittacosis, vaccinia and encephalitis), the veterinary research worker will find the descriptions of techniques which might be applied to his own particular problem of great use.—F. D. ASPLIN.

LAGERLÖF, N. (1948.) *Husdjurens vanligaste sjukdomar.* [Common diseases of livestock.] pp. 295. Stockholm: Nordisk Rotogravyr. Kr. 4.75. 1842

This is a handy-sized book for farmers and deals systematically with the more important diseases of horses, cattle, sheep and pigs. The scope embraces infectious, parasitic, nutritional, metabolic and organic diseases and the common kinds of poisoning. There are numerous photographs and figures.

Among the diseases dealt with is "skravelsjuka" a nutritional deficiency disease or group of diseases of cattle kept on farms with impoverished soil/herbage, which occurs in several regions of Scandinavia. Phosphorus is evidently the main deficiency, but it is incorrect to dub it an aphos-

phorosis. Copper deficiency also comes into the picture. The best rapid remedy is feeding of fodder from rich land. Feeding a phosphorus supplement alone sometimes fails.

Success seems to have been achieved in reconciling comprehensiveness and conciseness and the material is truly educational. Hygiene is dealt with so that the reader may know how to apply its lessons in prevention and control of diseases, whilst specific treatment is quite properly only mentioned in the briefest terms.—J. E.

HENNING, M. W. [M.R.C.V.S., D.Sc.; Professor of Veterinary Science, University of Pretoria]. (1949.) **Animal diseases in South Africa.** pp. xiii + 879. South Africa: Central News Agency, Ltd. 2nd Edit. completely revised. 1843

This new edition of Henning's well-known book has been largely rewritten. The omission of the section on toxicology has made it possible to produce it in one volume instead of the former two. Only the infectious diseases of mammals are dealt with. Although many of the diseases described have a world-wide distribution, special attention has been devoted to those which are of especial interest to Africa and South Africa in particular.

The book is therefore limited in its scope and is not intended to be a general textbook covering all the diseases of animals.

Notable omissions are swine erysipelas; listeriosis; melioidosis; leptospirosis; pasteurellosis and salmonellosis.

The section on protozoan diseases consists of five chapters and, as one would expect in a book from S. Africa, is a very strong section.

In the section headed viruses and rickettsiae, 17 diseases are described including three "new" diseases. Lumpy skin disease of cattle is highly infectious and has spread widely in the Union of S. Africa in recent years. First recorded in 1931 in N. Rhodesia it is characterized by an eruption of cutaneous nodules, oedema of the limbs and swelling of superficial lymph nodes; the cause is apparently a virus which has been cultivated on the chick embryo and transmission is probably by a flying insect.

Blouwildebeesoog (literally blue-wildebeest eye) a disease affecting mainly sheep, although cases have also been reported in cattle and horses, is characterized by exophthalmia and blindness sometimes with nervous symptoms and is invariably associated with contact with blue wildebeest (*Connochaetus taurinus*). The cause is not yet known, but pleomorphic bodies have been observed in the inflamed tunica propria of the conjunctiva.

Infectious infertility of cattle is the disease

first described by Daubney, Hudson and Anderson in Kenya in 1938 which they have called infectious bovine vaginitis and epididymitis. It is now known to exist in Kenya, S. Rhodesia and the Union of S. Africa. The cause is not yet definitely known, but experimental transmission has been effected and it appears probable that a virus is the causal agent.

A perusal of this book revealed several points which whetted one's appetite. For example, in dealing with East Coast fever, it is stated that an Indian buffalo has been infected at Onderstepoort. One would have liked more information on this important finding as the susceptibility of the Indian buffalo to the haematozoa of cattle is a subject on which information is scanty. There is an excellent account of rinderpest in which the importance of the goat in the spread of infection is not made sufficiently clear, reference might have been made to the introduction of rinderpest into Malaya and Ceylon by goats from India. The chapter on canine piroplasmiasis leaves one in some doubt as to whether *B. gibsoni* does or does not occur in Africa.

This book will be of great value to all workers in tropical and subtropical countries. It is very free from serious errors, but a misprint has occurred in the headings to pages 307 and 309 where clostridium has been printed as "clostritium". The printing is very clear and the binding very pleasing.—M. C.

ANTHONY, D. J. [M.R.C.V.S., D.V.S.M. (Vict.), F.R.San.I.]. (1950.) **Diseases of the pig and its husbandry.** pp. xi + 309. London: Baillière, Tindall & Cox. 3rd Edit. 17s. 6d. 1844

Compared with the second edition a chapter on Post Mortem Methods has been added and numerous additions have been made to the text. The book now extends to 309 pages, but it is debatable whether pig diseases and also housing, management and feeding can be treated adequately within this limited space. The general arrangement is the same as in the previous editions.

One would have liked a more critical editing of the text. Not only are many of the statements made highly debatable, but also the author's meaning is not always clear.

In the section on housing Linton's recommendations as to air space and air flow are given without comment. Most authorities now consider that Linton's figures err on the generous side. While agreeing that young pigs up to 60–70 lb. weight "will do well on 5–6 meals a day", surely this is a counsel of perfection?

Sharps and bran are not usually regarded as albuminous foods as is done on page 64; there is a misprint on this page, i.e., "mineral" for "minimal".

The acute arthritis described among the symptoms of swine influenza (p. 127) is not always associated with the presence of the swine influenza virus. The description of the *post mortem* findings in anaemia is confusing. Oedema of the stomach, bowel and eyelid is not generally considered a typical finding in anaemia of the young pig. Only passing reference is made to the "oedema of the bowel" syndrome.

It is stated (p. 149) that "it is no use treating the pigs (for anaemia) unless the food is attended to". Surely anaemia is essentially a problem in the young sucking pig before it begins to eat.

The description of rickets is needlessly vague and confusing and the section on avitaminoses is too general in its approach and the nomenclature employed, particularly for the vitamin B complex, does not assist in clarifying the issue. On page 192 one tablet of sulphamezathine (sulphamethazine) is recommended every four hours for the treatment of pneumonia in store pigs. One advantage of sulphamethazine therapy in farm animals is that such close interval dosing is not required.

All will not agree that phenothiazine is a very effective drug for the expulsion of ascarid worms. In this connexion only five lines are devoted to sodium fluoride.

A number of misprints were noticed. On page 42 "unable" should be substituted for "able" in the last line. On page 61 the table referred to as on page 59 is in reality on page 62. On page 128 "sulphamezathine" is probably intended instead of "sulphamegathine". "Bowel" should be substituted for "Bowl" on line 12, page 148.

It is particularly easy to be critical of a book on pig diseases. The defects of the present volume in a way underline our lack of precise knowledge concerning many aspects of pig diseases and pig husbandry and help to emphasize the need for more intensive research. The criticisms made above are not intended to be wholly destructive and it is hoped that they will help the author in planning the next edition.—D. LUKE.

WIRTH, D. [Former Director of the Medical Clinic at the Veterinary College in Vienna]. (1949.) **Einführung in die klinische Diagnostik der inneren Erkrankungen und Hautkrankheiten der Haustiere.** [Clinical diagnosis in internal and skin diseases of domestic animals.] pp. 175. Vienna: Urban & Schwarzenberg. 3rd Improved and Enlarged Edit. S. 98 ——. 1845

The first edition of this book was favourably reviewed 15 years ago [see *V.B.* 5. 106] and it can again be said that "it will be a valuable asset to veterinary students and a refresher for practitioners". Some new illustrations are included,

and some revision and extension of the text has been carried out. The style is clear and concise, the numerous illustrations, although small, show clearly what they are intended to show, and the book is of a handy size. The student who can read German should certainly read this book when commencing his clinical studies.—E. COTCHIN.

MØLLER-SØRENSEN, A. [Professor of Veterinary Medicine, Royal Agricultural and Veterinary College, Copenhagen]. (1949.) *Laerebog i den specielle veterinærkirurgi. [Textbook of special veterinary surgery.]* pp. 534. København: Carl Fr. Mortensen. 1846

This is a systematic textbook on surgical pathology for students dealing only, however, with diseases of the vertebrae and limbs. The previous occupant of the chair of surgery—A. W. Morkeberg—also wrote books on veterinary surgery, but these were too detailed and massive for undergraduate instruction, especially as the curriculum has lately been shortened.

It is not a textbook of practical surgery: indeed treatment is only outlined in brief general terms. Whether other books on the other regions are projected is not stated: in any case the student will be kept very busy assimilating what is here presented.

The emphasis is on the horse and ox and much less is said about small animals. The scope is comprehensive and covers malformations, injuries and diseases of the regions dealt with. The text is standardized in layout and very well supported by photographs and drawings, many being original. The paper, printing and binding are of good quality.

The book is of high technical value and can be recommended with confidence. It is unfortunate that so few of those who use the English language can read Danish, as the book would be of value to all interested in surgery of animals.—J. E.

STROMSTEN, F. A. D.Sc.; [Associate Professor of Zoology, University of Iowa] [Revised by]. (1947.) *Davison's mammalian anatomy. With special reference to the cat.* pp. xi + 349. Philadelphia: The Blakiston Co. 7th Edit. \$4.25. 1847

This book is one of the many which illustrates the cat as an introduction to mammalian anatomy and is intended to imbue the student with a desire to carry the mind beyond structure to function.

It is however in the main a descriptive treatise, but constant reference, often by diagram, to form in other species lends support to the author's thesis. Throughout, although the cat is in the foreground, comparative anatomical structure is considered in the way expected from the zoologist.

Following a general introduction on Phylogeny and Classification of the Vertebrates and a brief account of methods of preservation, the various systems are dealt with in the usual fashion considering microscopic, macroscopic and developmental features. The book concludes with a glossary of anatomical terms.

It is probably one of the best books written on the cat, will prove of interest to the comparative embryologist and a stimulating reference for the veterinary scholar. The bibliography is excellent.—C. W. OTTAWAY.

MARQUARDT, M. (1949.) *Paul Ehrlich.* pp. xx + 255. London: William Heinemann Medical Books Ltd. 25s. 1848

Miss Marquardt has succeeded in giving a clear portrait of the personality of her former employer, although his scientific achievements and their significance are not discussed at any length. This biography of Paul Ehrlich is made the more interesting by several well chosen illustrations and many anecdotes of his contacts with other famous scientists. Sir Henry Dale, O.M., contributes the introduction.—L. P. JOYNER.

ROUGHTON, F. J. W., & KENDREW, J. C. [Edited by]. (1949.) *Haemoglobin. A symposium based on a Conference held at Cambridge in June 1948 in memory of Sir Joseph Barcroft.* pp. xii + 317. London: Butterworths Scientific Publications. 40s. 1849

The death of Sir Joseph Barcroft in 1947 robbed the world of one of its leading physiologists and research workers in the field of the study of haemoglobin. This symposium opens with tributes paid to his memory by eight eminent physiologists who had worked with him during his long and distinguished career. The scientific part of the book comprises some 28 specialist papers on recent advances in different aspects of the general subject of haemoglobin. Broadly, these papers are grouped under seven sectional headings: Reversible Reactions with Oxygen and Carbon Monoxide; Analysis and Amino-acid Composition; X-ray Crystallography; Physico-Chemical Properties; Biochemical and Physiological Aspects; Differences between Adult and Foetal Haemoglobin; and Comparative Biochemistry and Physiology of Oxygen Carriers.

The treatment of each paper is on a very specialized plane and is primarily intended for workers in research aspects of haemoglobin physiology. The whole work therefore serves as a very valuable source of reference to those specializing in these particular fields and will continue to serve as such for several years to come. The conception of the work is on a very high plane, and its fulfilment serves as a permanent tribute to

the memory of one of the greatest physiologists of our time, whose work will live for ever.—A. E.

BROCQ-ROUSSEU, D., & ROUSSEL, G. (1949.) *Le sérum normal. Propriétés diastasiques du sérum et des différents éléments du sang.* [The normal serum. Diastatic properties of serum and the different elements of blood.] pp. 377. Paris: Vigot Frères. 3rd Edit. Part I. 1850

It has become clear that variation in the enzyme content particularly of blood is of considerable significance in medicine and the object of this work is to bring together in a convenient form the mass of information on enzyme activity so that it can be applied by the practitioner as an aid to diagnosis and prognosis. The work has been divided into two parts, the monograph under review forming Part I. It is concerned with those hydrolases present in blood serum.

The hydrolases are divided into three main groups, *i.e.*, enzymes which bring about the hydrolysis of carbohydrates, lipoids and proteins and their derivatives. The origin, properties and preparation of the individual enzymes are described; their occurrence and normal titre in the blood of various animals are considered as well as their physiological variation with age, the nutritive state, gestation, etc., and their variation in pathological conditions.

This monograph provides a well documented account of the various enzymes concerned and is written in such a way that it can be readily understood by the non-specialist.—J. A. NICHOLSON.

MEANS, J. H. [M.D.; Jackson Professor of Clinical Medicine, Harvard University]. (1949.) *The function of the thyroid gland.* pp. 37. Oxford: Blackwell Scientific Publications. 1st Edit. 5s. 1851

In this lecture to laymen the author explains in clear, lucid terms the biochemical function of iodine and the clinical problems associated in human beings with maladjustment of the thyroid gland.—E. EDEN.

HEWITT, L. F. [Ph.D., B.Sc., F.R.I.C.; Acting Director, Serum Research Institute, London County Council, Carshalton, Surrey]. (1948.) *Oxidation-reduction potentials in bacteriology and biochemistry.* pp. 130. London: London County Council. 5th Edit. 4s. 6d. 1852

This is the fifth edition of Hewitt's well-known monograph which was first published in 1931. The subject matter covers theoretical principles; general considerations; technical and experimental methods; systems of biological interest such as sulphhydryl, cytochrome, vitamins and hormones; bacteriological applications involving peroxide, anaerobiosis, bacterial potentials, milk and cheese assessment, chemotherapy to-

gether with a chapter on the polarograph. The completeness of the work is enhanced by chapter summaries, the very detailed and extensive bibliography of over 800 references, and by both author and subject indexes. The book is of value to all workers in biochemistry and microbiology. The paper covers are no doubt cheaper, but a cloth binding would make the book more durable without making the cost prohibitive.—M. W.

MRAK, E. M. [University of California], & **STEWART, G. F.** [Iowa State College]. (1948.) *Advances in Food Research.* Vol. I. pp. xv + 459. New York: Academic Press Inc. \$7.50. 1853

In the editorial foreword to this first volume of a new series it is stated that every endeavour will be made to provide critical and exhaustive reviews of studies concerned with human nutrition, food acceptance (by the public), agriculture, microbiology and public health, biochemistry and histology, food technology and engineering, entomology and zoology, and economic considerations of food supplies. The editors are to be congratulated on their choice of subjects and authors for the ten reviews in this volume. All give useful and well integrated surveys of their problems with excellent references to enable those who want further detail to seek it at its source.

An entertaining and invaluable discussion of the physiological basis of voluntary food intake is provided by S. Lepkovsky of the University of California. This subject is certainly fundamental to the whole field of food research and it is well to have this article in the first volume of advances in food research.

The subjects of other reviews in this volume include problems of palatability of poultry; deterioration of dried eggs, processed potatoes and fruit products; physiology and chemistry of rigor mortis with special reference to the aging of beef; factors influencing the vitamin content of tinned foods; microbial inhibition by food preservatives; high-polymer pectins and their de-esterification.

—A. M. COPPING.

VINTIKA, J. (1948.) *Studium reinfekce mléka. Část první. Jednotná metodika pro počítání bakterií v mléce.* [Infection of milk, part I. Uniform method of counting bacteria in milk.] pp. 76. Prague: Tiskové Podniky ústředního svazu čs. průmyslu. 1854

This booklet is the result of studies on the composition of media for bacteriological milk analysis and on plate count methods.

There are five diagrams, many tables, an English and a Russian summary and an extensive bibliography.—E. G.

LESBOUYRIES, G. (1949.) *Reproduction des*

mammifères domestiques. [**Reproduction in domestic mammals.**] pp. x+712. Paris : Vigot Frères. 1855

This is a fine volume, inspired, as the author declares, by the realization of the importance of infertility conditions in the pathology of domestic mammals and with the object of affording the veterinarian a thorough knowledge of reproduction in each species for the successful treatment of their reproductive disorders. A compiled work, it deals with reproduction in the horse, ox, goat, pig, dog, cat and rabbit respectively.

There is a section on heredity with an historical background. Commencing with the simple cell and the histology of cellular reproduction and Mendelian inheritance, the role of the chromosomes and genes and the inheritance of pathological conditions are discussed.

The embryology of the genital organs is described and also the general anatomy and histology of the male and female organs and the mammary gland. The anatomy and histology of each domestic species is given in detail.

Excellent diagrams, photographs and photomicrographs accompany each stage.

The physiological description is given on a similar plan, concluding with gametogenesis, hormone secretion and the regulation of the function of the gonads.

A section deals with the differentiation of sex and intersexual types.

The presentation of this work, its excellent illustrations and regard to detail achieve the author's object: to supply the knowledge of reproduction necessary as a background for the study of infertility in its various aspects, sterility, embryonic and foetal death with or without abortion, stillbirths and the pathology of the newborn in mammals; while making the distinction that the manifestations are peculiar to each species consequent on their differing anatomo-histology and sexual physiology.—JOHN MAFFEY.

GÖTZE, R. (1949.) Besamung und Unfruchtbarkeit der Haussäugetiere. [**Insemination and sterility of domestic animals.**] pp. xii + 618. Hannover: M. & H. Schaper. DM. 58. 1856

Although this book was published in 1949 the text was prepared a few years before and the preface is dated "1947". An extensive list of references covers the period up to 1946.

This is not intended as a textbook but rather as a guide and stimulus to further investigation and as such it naturally includes accounts of much of the author's own work at Hanover. After a few pages dealing with the history of artificial insemination there are some 180 pages which give a description of the sex organs and the general principles of artificial insemination. The main section of 860 pages deals in great detail with this

process in domestic animals—ox, sheep, goat, horse, pig, dog, fox and rabbit. There follows a short chapter on its application in veterinary practice and the possible dangers involved in its use.

All who are concerned with the process will benefit from a study of this book because of the detailed accounts of a great variety of techniques and observations on such subjects as:—the time relation between ovulation, insemination and conception, pregnancy diagnosis, the morphological and physico-chemical characters of semen, and the development of oestrus after removal of the corpus luteum. These and other aspects are illustrated by numerous figures and tables.

As an account of the technique and development of artificial insemination up to 1946 this lengthy record forms a useful reference work by one who has devoted many years to the subject and who had before the war established a cattle clinic with a world-wide reputation.—E. G. W.

KÜST, D., & SCHÄETZ, F. (1949.) Fortpflanzungsstörungen der Haustiere. [**Reproductive disorders in domestic animals.**] pp. xi + 207. Stuttgart: Ferdinand Enke. DM. 15. 1857

The first 40 pages of this book provide a short introduction to the physiology of reproduction and a useful account of pregnancy diagnosis in the mare and cow. There follow 90 pages dealing with reproductive disorders in the cow and 40 pages devoted to the mare. Sheep, goats and pigs are dealt with in a chapter of 20 pages.

Short lists of references, mainly to work published during the past ten years, are given at the end of each section. The text is illustrated with 55 photographs and drawings: those which deal with the diagnosis of pregnancy are particularly useful. At the end of the book are facsimiles of the record forms used at the Ambulatory Clinic at Giessen.

A few pages are devoted to a discussion of the precautions necessary to avoid damage to the patient when examining animals for pregnancy or treating them for sterility.

Artificial insemination is referred to as a means of controlling certain infectious reproductive diseases.—E. G. WHITE.

GALLINA, L. (1948.) Le placentiti o la ritenzione della placenta nella vacca. [**Placentitis and retention of the placenta in cows.**] pp. 74. 16 figs. Milano-Varese: Istituto Editoriale Cisalpino. Lire 400. 1858

The author has produced a treatise on placentitis and retention of the placenta, which should be useful to the large animal practitioner. He deals with his subject in general terms of pathology, and although the description is somewhat superficial, it is quite sufficient to provide the veterinary

surgeon with a basis for developing a rational method of treatment adapted to each individual case.

Placentitis is classified as (1) nonspecific, including hyperaemic, necrotic, adhesive and non-adhesive types, and (2) specific, including brucellosis and TB. These are described in detail, but there is only passing reference to the less common bacterial infections and to trichomoniasis. Hormonal influence is not considered at all.

The latter part of the book deals with the treatment of the various types of placentitis, and follows conventional lines, but with special emphasis on antisepsis and asepsis. One diagram gives a vivid resumé of the effects consequent on wrong treatment and should make the veterinary surgeon think deeply before removing the adherent placenta in certain cases.—I. W. JENNINGS.

MILLER, W. C. [M.R.C.V.S., F.R.S.E.; Director, Equine Research Station, Veterinary Educational Trust, Lanwades Park, Newmarket], & ROBERTSON, E. D. S. [M.R.C.V.S.; Indian Army (retired)]. (1947.) **Practical animal husbandry**. pp. xii + 578. Edinburgh, London: Oliver & Boyd. 5th Edit. 24s. 1959

Since this book was first introduced some 15 years ago its scope and size have gradually increased and, in the preface to this fifth edition the claim is made that the book now deals with all those species of animals which are normally domesticated in Britain.

The only major change in this edition is that a chapter on the Management of Cats has been added; in the writing of this the help of Hamilton Kirk is acknowledged.

The value of this book to veterinary students and to many others is now well established. The methods of manipulation and restraint which are described in the earlier chapters are all based upon practical experience and the book contains much information which is not readily found elsewhere. Some of the later chapters (those dealing with the management of the different species, for instance,) are less satisfactory and it is probable that the acknowledged usefulness of the book could be further enhanced by rearrangement and revision of these sections.—G. A. WILLIS.

LANGERON, M. (1949.) **Précis de microscopie. Technique — expérimentation — diagnostic. [Précis of microscopy.]** pp. viii + 1430. 392 figs. Paris: Masson et Cie. 7th Edit. Fr. 2,600. 1960

The seventh edition of this standard work has been largely rewritten. The sixth edition was prepared during 1940–41, during which time periodicals in the English language were not available to the author, but in this new edition he has been able to incorporate the many advances made elsewhere during and since the years of

occupation of France. Considerable space is given to the use of polarized light, of phase-contrast microscopy, and of the electron microscope, although in relation to the last, developments are admittedly so rapid that it has been necessary to incorporate the more recent developments in an addendum. Micromanipulation procedures are described, and newer staining and impregnation methods are included, in all instances with details taken from the original papers. There have, in fact, been important publications since the manuscript was prepared: this must be the fate of almost any similar modern text; so that while the publications up to 1945 of R. BAKER are drawn upon, it is unfortunate that his more recent studies in cytochemistry, which have aroused considerable interest in Great Britain, are not noted. One omission of a different category is any reference to the studies, extending over some 15 years, of F. BAKER. This is surprising, since there is a separate section on microscopy as applied to microbiology. In such a massive work, attempting to deal comprehensively with what is now a vast field of inquiry, it is however bordering on the impossible for any one author to avoid some errors and omissions, and it is a tribute to the industry of Langeron that he appears to have overlooked very little of value, up to 1947, among British contributions.

Possession of this work will lessen very considerably the task of research workers and technicians in keeping abreast of standard methods.

—ALASTAIR N. WORDEN.

JONES, H. W. [M.D.], HOERR, N. L. [M.D.], & OSOL, A. [Ph.D.] [Edited by]. (1949.) **Blakiston's New Gould medical dictionary**. pp. xxviii + 1294. Philadelphia: Toronto: The Blakiston Co. 1st Edit. \$8.50. 1961

This is called a "completely new" reference work described as having been based upon Gould's Medical Dictionary.

Features of this dictionary which should be especially appreciated by those who will use it are its excellent clear type, good quality paper and strong, serviceable binding; the thumb indentations for easy quick reference and the deep blue colouring of all the edges are sensible for a volume which must stand up to years of wear; the alignment of sub-entries and the setting of each item in bold-face type are welcome aids to the eye. The Greek derivations are given in transliterated form and the system of indicating pronunciation with syllabification and accentuation is easier to follow than those generally used.

An appendix of 137 pages contains various useful tables and lists which include: elements, enzymes, hormones, proteins and vitamins. Thermometric equivalents are also included and there are 16 pages (double columns) of veterinary doses,

for horses, cattle, sheep, pigs and dogs. Many veterinary terms are included in the text, although naturally enough the veterinarian will not find new drugs such as antrycide or "new" diseases like "hard pad," the literature having been covered only up to 1948.

The 252 illustrations, 129 of which are in colour, have been given a section of their own in the middle of the volume and cross-references are made to them in the text.

The editorial board, with the aid of more than a hundred distinguished contributors among whom is one doctor of veterinary medicine, have admirably succeeded in their immense task and this dictionary can be regarded as a standard reference work.—F. E. W.

KAPP, R. O. [B.Sc., M.I.E.E.; Pender Professor of Electrical Engineering, University College, London; Dean of the Faculty of Engineering in the University of London]. (1948.) **The presentation of technical information.** pp. xi + 147. London: Constable & Co. 6s. 1862

This stimulating little volume, based on a series of public lectures given at University College, London, deals mainly with the writing of what the author terms "functional" English, *i.e.*, a way of writing that is clear, precise and yet

See also *absts.* 1665 (foetal erythroblastosis in rabbits); 1831 (warfare and veterinary profession).

not dull. The work is, as the author states in his preface, his contribution to what he deems "a field of study . . . worthy of a scholar's attention, and one in which many ought to help." Emphasis is laid on the need for improvement in the standard of presentation of technical information and on the responsibility of the scientist and the technician towards their mother tongue in preventing it from becoming drab and uninteresting by slipshod usage. It is pointed out that nowadays the proportion of technical literature to other printed matter is becoming so high that if a high standard is sought after and maintained it could have a considerable influence on the writing of technical English.

The author considers that much careless, bad writing and poor exposition could be avoided if the writer would have more consideration for the reader, who will often be less informed on the subject than himself. Excellent advice is given on devices for maintaining the reader's interest and aiding his memory by careful choice of words. Innumerable examples quoted from technical literature are critically examined and their faults laid bare and corrected.

Anyone who has scientific or other technical information to impart should benefit by reading this book.—F. E. W.

BOOKS RECENTLY RECEIVED

[Notice of recently received books in this list does not preclude review]

BAITSELL, G. A. [Edited by]. (1949.) **Science in progress.** pp. xv + 322. New Haven: Yale University Press. London: Geoffrey Cumberlege, Oxford University Press. 6th Series. 40s.

DIXON, M. (1949.) **Multi-enzyme systems.** pp. 100. Cambridge: University Press. 7s. 6d.

FRÖHNER. (Revised by REINHARDT, R. (1950.) **Lehrbuch der Arzneimittellehre für Tierärzte. [Fröhner's textbook of veterinary pharmacology.]** pp. xii + 400. Stuttgart: Ferdinand Enke. 18th revised Edit. DM. 27 --.

HAUDUROY, P., CHAIN, E., FLOREY, H., JENSEN, K. A., PENSO, G., TRÉFOUËL & WELLS. (1950.) **Bacilles tuberculeux et paratuberculeux. Bactériologie. Chimie antibiotiques. Chimiothérapie. [Mycobact. tuberculosis and other mycobacteria.]** pp. 188. Paris: Masson & Cie. Fr. 850 --.

HEWER, E. E. (1949.) **Textbook of histology for medical students.** pp. viii + 432. London: William Heinemann Medical Books, Ltd. 5th Edit. 25s.

MEDVEI, V. C. (1949.) **The mental and physical effects of pain.** pp. 59. Edinburgh: E. & S. Livingstone, Ltd. 3s.

PETERS, H. M. (1948.) **Grundfragen der Tier-**

psychologie. Ordnungs- und Gestaltprobleme [Animal psychology.] pp. vi + 117. Stuttgart: Ferdinand Enke. DM. 17 --.

RAMON, G. (1950.) **Le principe des anatoxines et ses applications. [Anatoxins and their application.]** pp. 229. Paris: Masson & Cie. Fr. 800 --.

ROLFE, H. G. [Revised by]. (1950.) **Bennett's materia medica and pharmacy for medical students.** pp. xxviii + 276. London: H. K. Lewis & Co., Ltd. 5th Edit. 16s.

SILBERSIEPE, E., & BERGE, E. (1950.) **Lehrbuch der speziellen Chirurgie für Tierärzte und Studierende. [Textbook of special veterinary surgery.]** pp. xii + 524. Stuttgart: Ferdinand Enke. 11th revised Edit. DM. 39 --.

STEYN, D. G. (1949.) **Vergiftiging van mens en dier met gifplante, voedsel en drinkwater. [Poisoning in man and animals with special reference to plant poisoning.]** pp. viii + 264. Pretoria: J. L. van Schaik, Ltd. 25s.

TRAWINSKI, A. (1948.) **Mięsoznawstwo podręcznik do użytku lekarzy weterynaryjnych, lekarzy i studentów. [Textbook of meat inspection for veterinarians and veterinary students.]** pp. viii + 918. Warsaw: Lekarski Instytut Naukowo-Wydawniczy.

INDEX VETERINARIUS

The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

The latest list of the publications searched for this purpose was circulated with the *Veterinary Bulletin*, Vol. 20, No. 1.

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Vols. 1 to 5 (1933 to 1937) were issued quarterly, each volume covering the literature searched in the previous quarter, and Vols. 6 to 12 (1938 to 1944) half-yearly, each volume covering the literature searched in the previous six months. Vol. 13 (published 1946) was a single annual issue covering the literature searched in 1945; Vol. 14 is a single issue covering the literature searched in 1946. Vol. 15 will also be a single issue.

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43. Land classification for land-use planning. June, 1946	4s. 0d.
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